

FOREMANSHIP
AND
SUPERVISION

BY THE SAME AUTHOR

Mathematics and the Machinist's Job.

The Practical Mathematics of the Machinist's Trade. Prepared for the use of machinists, machinist's apprentices, and students of machine shop practice in vocational schools. The Wiley Trade Series, Edited by J. C. WRIGHT. 226 pages. 5 by 7. 134 figures. Cloth.



FOREMAN CONFERENCE

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Frontispiece

FOREMANSHIP AND SUPERVISION

A PRACTICAL HANDBOOK FOR FOREMAN CONFERENCE
LEADERS AND SUPERVISORS OF VOCATIONAL
EDUCATION

BY

FRANK CUSHMAN

CHIEF, TRADE AND INDUSTRIAL EDUCATION SERVICE
U. S. OFFICE OF EDUCATION
WASHINGTON, D. C.

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AUTHOR'S PREFACE

THIS book deals primarily with the conference procedure as applied to certain work in the field of vocational education. The emphasis which is here placed upon the conference procedure is not intended to reflect any criticism upon other types of educational procedure.

The success which has attended conference work with industrial foremen, vocational teachers, and supervisors, and the present widespread demand for instruction and training in the use of the conference procedure, would seem to justify this attempt to present some information relative to the operation and management of conferences.

Special acknowledgment is made to Charles R. Allen of the Federal Board for Vocational Education, to whom the author is indebted for advice and assistance relative to all of the work which he has done in the field of vocational education during the past eight years. Mr. Allen is the man who first conceived the idea of conference work with foremen, and it is due to his pioneer work in this field that such a book as this has become possible.

Acknowledgment is made to Mr. C. F. Klinefelter of the Federal Board for Vocational Education, Washington, D. C.; Mr. W. E. Parker, General Superintendent, Emsco Derrick and Equipment Co., Los Angeles, Calif.; Mr. H. H. Norris, Educational Advisor, Boston Elevated Railway, Boston, Mass.; and Mr. L. S. Harding, Educational Director, Worthington Pump and Machinery Corporation,

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To my daughter Alice and my son Robert I am indebted for assistance in preparing the manuscript for publication.

FRANK CUSHMAN.

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INTRODUCTION

THE MECHANICS OF TEACHING AND THE ART OF TEACHING

A WORKING knowledge of the mechanics of teaching may be acquired by a person of average intelligence in a much shorter period of time than is commonly supposed. A knowledge of the mechanics of teaching does not, however, serve as a reliable index of a person's ability to teach. Teaching is an *art* as well as a science, and while there is no agreement regarding the preponderance of the art as compared with the science, it is generally recognized that skill in practicing the art of teaching probably constitutes from 50 to 90 per cent of the so-called professional equipment¹ of a teacher. It is entirely possible, therefore, for a person to take courses in education, read books on education, and become thoroughly posted on the latest educational information, literature, and the mechanics of teaching, without possessing any noticeable degree of ability in the practice of the art of teaching. In other words, a person may possess information and be almost completely lacking in the ability *to use it*, in teaching, as well as in other fields of human activity. In most practical occupations, success is more dependent upon ability to practice an art than upon the

¹ Professional equipment as here used means teaching skill, wholly independent of a thorough knowledge of the subject or subjects taught.

possession of a fund of technical knowledge concerning how the art *may* be practiced.

Talent and Mechanical Performance.—The following example illustrates the difference between ability to practice an art and a command of the mechanics related to the art.

Many persons are wholly or partly lacking in musical talent, even to the extent of being unable to recognize different melodies or “tunes,” or to recognize accurately whether or not musical instruments are “in tune.” Such persons can be drilled and trained to perform on certain musical instruments (such as the piano) in a mechanical sort of way. They do not, however, develop into musicians in the real sense, and they never can be successful performers. Such persons fail to put expression into their work—it lacks the intangible something that a real musician puts into his playing, which makes the difference between mechanical performance and artistic performance. They can, through training, be brought up to a point where they possess a *mechanical technique*, but no amount of information, education or training can give them the *ability* necessary for them to develop into talented musicians. Conversely, there are persons who are naturally musical. Very often, with little or no training, such persons can “pick up” almost any musical instrument and render simple pieces in a pleasing manner. This second type of person possesses the latent ability to practice the art of music and can easily be developed into a real musician.

In the field of teaching, the situation is much the same. Persons who possess the characteristics of a real teacher, including latent ability in the art of teaching, very often succeed better with little or no training in the technique of teaching, than do other individuals who lack this native ability but have enjoyed all sorts of opportunities to secure

technical information and training relative to teaching. The person who has the native talent and latent ability to teach naturally possesses from 50 to 90 per cent of the equipment which he needs in order to practice the *art* of teaching successfully. The person without the native ability can never be made into a real teacher by any amount of training.

The following chapters represent an attempt to present certain special information relative to the principal types of educational procedure which have been found to be of value in working out the best methods of handling certain special kinds of teaching with trade and vocational groups and classes. Any informational presentation such as this falls short in many respects of giving the reader an adequate idea of the practice of the art in the case of such a highly specialized teaching job as leading a foremen's conference. For the person who is interested in the problem, however, there should be many points of value, and the possession of this information, together with ability to utilize it in practice, is about all that a person with the necessary native ability will need in order to become successful as a conference leader.

FOREMANSHIP AND SUPERVISION

PART I

CHAPTER I

TYPES OF EDUCATIONAL PROCEDURE

Preliminary.—There are three principal types of educational procedure which have been found to be of value in the field of vocational education. These procedures are as follows:

1. The Informational Procedure.
2. The Instructional Procedure.
3. The Conference Procedure.

These procedures differ fundamentally in the aims or objectives which are associated with their use. The informational procedure is followed in cases where the purpose is to impart information; the instructional procedure, where the objective is to teach some one to do a job which he could not do before being taught; while the conference procedure is followed when the principal objective is to stimulate a group to active thinking relative to their jobs, their responsibilities, and their problems.

The Informational Procedure.—The imparting or securing of information is an important phase of almost every kind of educational work. Information may be imparted

CHART NO. 1

TYPE	PURPOSE	MAN IN CHARGE	JOB OF PERSON IN CHARGE	RESULT
1. Informational meeting.	To give out information and to see that it is understood.	Chairman.	To impart information.	Men have and understand information which they did not have before.
2. Class.	To teach members of class to do a job—Production or Technical.	Instructor.	To instruct the members using recognized instructional methods.	Men can do something which they could not do before or men have some additional knowledge or skill, or both.
3. Conference.	To organize experience and assist men to think through their problems.	Leader.	To lead, direct and control discussion and carry group through procedure of constructive thinking.	Men have done some constructive thinking in relation to their jobs and have developed a clearer conception of their responsibilities.

Example for Type 1.—A meeting of foremen called by the superintendent for the purpose of explaining company policies.

Example for Type 2.—A class of apprentices in machine shop mathematics or trade school class in printing.

Example for Type 3.—Group of experienced foremen, meeting for discussion and to exchange opinions regarding their jobs.

by lectures, addresses, or other forms of verbal communication; by written or printed material, including books, pamphlets, and bulletins; by drawings, pictures and diagrams; and in other ways. The imparting of information is generally recognized as an important and necessary part of the work of teachers, instructors, and professors. It is also a necessary part of the work of superintendents, supervisors, and foremen in industry.

Much school and college work is often characterized by the use of informational procedures by teachers and professors to the almost utter exclusion of other desirable and worth-while methods of instruction. When professors lecture to groups of students, ranging in number from fifty to a thousand or more, they are compelled, by the working conditions, to limit their objectives to the dissemination of information.

Meetings of various kinds (often designated as conferences) are, in the majority of cases, informational meetings called for the purpose of giving out information to a number of people simultaneously, or for the purpose of securing information from the persons in attendance. Meetings of minor executives, supervisors, department heads, or instructors, are very often carried one step farther than the mere issuing or gathering of information, by checking up on the information given out to make sure that it is understood by those attending the meeting.

The exchange of information is important, and it would be a mistake to discount its value when it is employed in educational work for purposes for which it is suited. For certain kinds of objectives it has superior values; for other educational objectives, it is not at all suitable.

The Instructional Procedure.—This educational procedure is characterized by the use of the instructing process,

sometimes known as the formal lesson. Under this procedure the person in charge of the work actively teaches and is recognized as an instructor by the persons with whom he works. The use of the instructional procedure presupposes the relationship of instructor and learner, or, to use the school phrase, teacher and pupil.

The instructional procedure, as ordinarily applied in teaching vocational subjects, consists of at least four essential steps, viz.: 1, *preparation*; 2, *presentation*; 3, *application*; and 4, *test or inspection*. A fifth step, *generalization*, is sometimes used in vocational instruction, especially in connection with related technical instruction.

The following chart gives a condensed summary of the instructional procedure and the methods most often found to be of value in vocational education.

Instructional Procedure:

STEPS	METHODS
Step 1—Preparation (Getting ready).	Informational demonstrations Informational questions Suggestive questions
Step 2—Presentation (Putting over)..	Demonstration Illustration Experimentation Lecture
	Auxiliary information in addition
Step 3—Application (Trying out and patching up).....	On the job Questions Supplemental demonstrations or illustrations
Step 4—Test (Inspection).....	On the job Questions

For educational or training objectives, where the purpose is to teach learners to do something which they could do only imperfectly or not at all before being instructed, the instructional procedure is the correct one to follow. It should be clearly understood that the instructional procedure involves or includes more than merely showing or telling,¹ and that the imparting of information (auxiliary information on the preceding chart) is incidental only.

Whereas the informational procedure is well adapted to the attainment of certain educational objectives, it should be apparent that it is not "the whole thing" in education. Likewise, the instructional procedure, while particularly effective for the purposes for which it is suited, becomes formal and out of place when attempts are made to utilize it at the wrong time and place and where some other procedure is indicated by the objective to be put over. An instructor has occasion to use both the informational and the instructional procedures singly or in combination as the need may arise. His skill as a teacher is reflected in the ways in which he uses either one or both of these procedures in handling groups of people.

The Conference as an Educational Procedure.—The conference as an educational procedure consists essentially of a systematic, though somewhat informal, thinking through of problems by a group of experienced persons. The experience of the group members is the principal and most important element involved in the work of a conference group. The experience of group members which is related to the problems or questions presented for group consideration, forms the principal basis for discussion. There is no

¹ For detailed information on the instructional procedure in vocational education, see "The Instructor, the Man, and the Job," by Charles R. Allen.

“content” or subject matter to be *taught* in a conference and the leader should not be looked upon by a conference group as a teacher or a professor. In a class organization where the regular instructional and informational procedures are used, it is always clearly understood by the members of the class that the person in charge is a teacher or instructor who is present for the purpose of teaching or instructing them with respect to matters on which he is better informed than they. In other words, the instructor or teacher has a well-defined job of teaching, or “putting over,” recognized “content” or subject matter. Under the conference procedure the person in charge functions as a leader of discussion rather than as a teacher in the ordinary sense.

The Essential Stages or Steps in the Conference Procedure.—There are six well-defined stages in the progress of a conference of the type referred to in the preceding paragraphs. These stages are as follows:

1. The assembling of data or facts concerning a problem or question.
 - a. From first-hand experience (our own experience).
 - b. From second-hand experience (the experience of others).
2. The selection of data or facts which are pertinent to the problem or question under discussion.
3. The evaluation of the functioning facts or data.
4. The making of a decision based upon the functioning facts.
5. The formulation of a plan to carry out the decision.
6. The execution of the plan.

NOTE: Stage 6 is usually accomplished subsequent to the conference and is not, therefore, an integral part of the conference itself.

Moreover, in practical conference work, the conference, as such, often terminates when stage 4 is completed.

Overlapping of Stages.—It should be clearly understood that the several steps or stages of the conference procedure are not necessarily entirely separate and distinct. In actual practice there is usually considerable overlapping as between the different stages. A leader should have in mind the general procedure to be followed, but he should not shut off discussion or refuse to accept additional facts or data after a conference has progressed into stage 3, just because the data are, theoretically, supposed to be secured in stage 1. In this, as in most other practical situations which call for good judgment, there is no satisfactory substitute for a man on the job who will use his head according to the conditions with which he has to deal.

Objective or Topic Often Unannounced.—Every conference must necessarily deal with some problem, question, or other topic. The problem, topic, or question to be dealt with is, of course, always known to the conference leader; but he may, under certain conditions, prefer to start the discussion on a topic without first making a definite statement or even announcing the topic to the conference group. Very often, experienced conference leaders open a conference discussion by citing a case and inviting the group members to comment on it or discuss the way in which it was handled.

Experience a Necessary Element.—Group conference discussion is possible only when the problems or questions considered are very closely associated with the experience of the group members. Persons who have had no experience related to a given problem cannot participate in a *conference* on that problem. An attempt to conduct a conference with a group of inexperienced persons is about as fruitful

of results as to attempt to pump water with an air-bound pump.

Active Thinking Promoted.—One important value of the conference as an educational procedure lies in the fact that conference discussion, properly directed, promotes active thinking. Members of a conference group are given an opportunity to think out problems for themselves. Conference work is profitable in proportion as the leader encourages and promotes the thinking of the group members instead of doing all of the thinking himself in advance, and then telling the group all about it. When a man actually thinks a problem through and arrives at an intelligent conclusion *as a result of his own thinking*, he feels that the conclusion or decision is his own and that the procedure indicated is dictated by his own rather than some other person's intelligence.

The Conference Procedure and Educational Objectives.—It should be perfectly clear that the conference, as an educational procedure, should be used with discretion. It has peculiar merits for certain kinds of educational work; for other kinds it would be foolish to attempt to apply it. The conference procedure is particularly useful in dealing with persons of experience who carry supervisory, administrative, and instructional responsibilities as a part of their jobs. For objectives associated with the organization or pooling of experience, the conference has possibilities not found either in the informational or in the instructional procedures.

In practical situations it is often necessary for a conference leader actually to function as an instructor at intervals in the conference work, and follow the informational and instructional procedures. A skillful conference leader should, therefore, be a first-class teacher as well, and he will

be successful in proportion as he can use the best and most suitable procedure in any given situation without becoming self-conscious or artificial in his work.

Considerable detailed discussion of the stages through which a well-conducted conference progresses, together with information and suggestions for conference leaders, is given in the following chapters.

CHAPTER II

THE PRINCIPAL TYPES OF CONFERENCE OBJECTIVES

Preliminary.—As has been indicated in the preceding chapter, the conference is a *procedure* or method which is of great value and utility in handling certain kinds of educational objectives. The use of the conference as an educational procedure is indicated where it is desirable to pool the experience of a group of people who have had a great deal of experience in the particular field from which the conference topics, questions, or problems are drawn.

General Objectives of Conference Work.—The conference procedure has been found to be especially valuable for such purposes as:

1. Securing a composite opinion which may be used directly in establishing a new policy or modifying an existing policy.
2. Modifying the viewpoint of some or all of the group members for the purpose of securing better team work in the organization.
3. Helping each group member to analyze his job, identify his responsibilities, and discover better and more effective ways of meeting his responsibilities.
4. Assisting each individual member of a group to *organize* his experience to the end that it may be of increased value to him on his job.

5. Making analyses of situations or cases involving joint responsibilities in order to secure a smoother working organization.

Illustration of the First Type of Objective.—The question of safety and accident prevention in a certain plant is handled by the conference procedure with a group of experienced foremen. Cases are carefully considered and analyzed and the fact is clearly brought out that a considerable proportion of the so-called accidents are really due to ignorance on the part of the persons injured. Owing to the easy habit of taking “snap judgment” many of these accidents have, in the past, been attributed to carelessness on the part of the worker. Careful analytical thinking by the group of foremen, in conference, brings out the fact that a foreman is responsible for *knowing* that each one of his men possesses at least the minimum knowledge and skill necessary to do the work to which he is assigned. This result or conclusion, arrived at as a result of *thinking the problem through* helps each foreman to identify and meet his responsibilities as *an instructor on the job* in his department. Having secured a composite opinion relative to this matter and a recognition of responsibilities on the part of the group of foremen, it is a relatively easy matter to establish in that plant a policy of holding foremen responsible for the instruction of their men. Without the conference discussion it might have been a very difficult matter to secure an equally effective acceptance of the new policy.

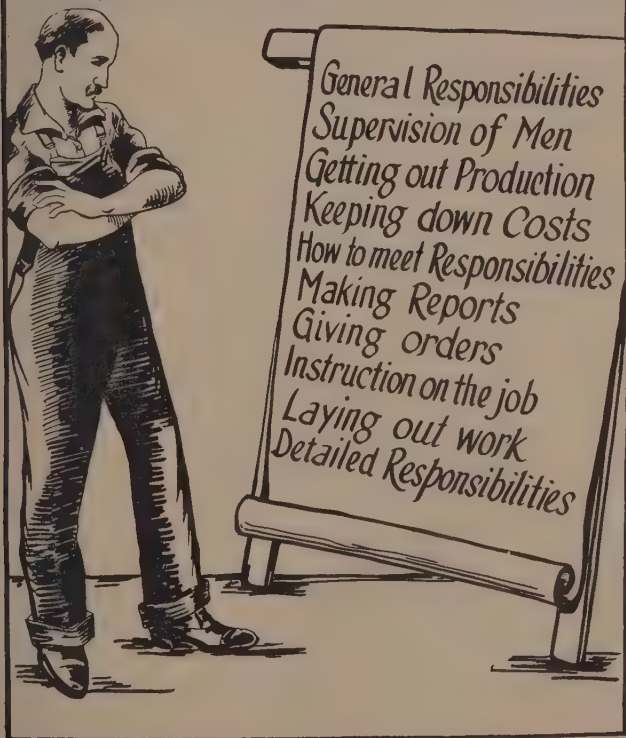
Illustration of the Second Type of Objective.—Team work in an organization is secured in proportion as cooperation exists. What is known as *horizontal* cooperation—cooperation between men of equal rank—is one of the most valuable things, as far as personnel relation-

ships are concerned, that can obtain in any organization. This particular kind of cooperation cannot be secured by orders, exhortations, or "big-stick" methods. It can only be secured when the individuals concerned have the right mental attitude toward their jobs and their fellow workers and *want* to cooperate with them. The conference procedure has been found to be particularly valuable in promoting true horizontal cooperation in industrial, educational, and business organizations. Through well directed discussion of concrete cases, involving opportunities for cooperation which may or may not have been taken advantage of, a real appreciation by the group of the value of cooperation can be secured. Cost elements can often be identified and emphasized in such a way as to bring individuals in a group around to the point where they will *want* to be better team workers in the organization which employs them. In one plant where the conference procedure was used, the management reported that the "wall of ice," figuratively speaking, which had existed between two adjacent departments had completely "melted down." In this case both foremen were first-class foremen, *each in his own department*, but neither could appreciate the other fellow's troubles and problems. Prior to the holding of the foremanship conference, the management had tried in many ways to bring about a more desirable state of affairs without getting any results. After the foremanship conference the situation "seemed to take care of itself."

Illustration of the Third Type of Objective.—The general purpose of the group of objectives indicated under (3) is to help a man to visualize his job, or to view his job and its component parts *objectively*. The cut on page 13 illustrates the idea.

In conjunction with the securing of ability, on the part

THE FOREMAN TAKING A LOOK AT HIS JOB



of group members, to visualize their jobs, it usually follows that job pride is stimulated. The men begin to appreciate the importance of being foremen. Experience has shown conclusively that this is a desirable thing to accomplish. It should be noted that building up a man's interest and pride in being a first-class man *on the job which he has* is a very different thing from making him dissatisfied with his job to the point where he begins to feel that his future happiness will depend upon his being advanced to the superintendency. Informational courses dealing with technical and business subjects which a foreman would never use *as a foreman* have, in many cases, resulted disastrously both to the foreman and to his employer because of the dissatisfaction promoted. Incidentally, it is pointed out that one of the best ways of preparing a man for the next job ahead is to help him to become thoroughly efficient on the job which he has.

Another illustration of the working out of the type of objectives indicated under this classification would be to consider the foreman as being in a condition similar to that of a photographic plate which has been *exposed* but not *developed*. The *picture is there* but the application of a developing solution is necessary to *bring it out*. A well-conducted foremanship conference functions with an experienced foreman in much the same way as the developing solution functions in bringing out the picture on the plate.

Illustration of the Fourth Type of Objective.—Persons of long experience in a given line of work really know much more about their jobs than they are fully aware of. This is very generally true of shop foremen. It is due to the fact that they have developed an assortment of habits. This means that they do a lot of their work without finding it necessary to direct consciously every move that they make.

In other words, a large amount of their job knowledge has slipped down into their subconscious minds.

As someone has said, "they do a lot of their work with their backbones." The same situation is true more or less in practically all phases of human life. The person who is skilled in driving his automobile does not have to "think" what he is doing as he drives down town to his office. If he "thinks" at all he "thinks" about his business or social affairs, where he is going, how he is going to handle a certain proposition and similar matters. A man does not *think* when he adjusts his necktie or winds his watch or alarm clock. In other words, a person who is skilled on a job performs much of his work more or less automatically. Moreover, much of his knowledge, the result of his experiences, has been "absorbed" and he is not fully aware of the possession of as large a reservoir of job knowledge as he really has at his disposal.

By conference methods it is possible to "pull out" more or less of this job knowledge of long standing, help the group members to organize it and utilize it for all that it is worth. This particular kind of conference work has been roughly described as "turning your man inside out and shaking him." With an average group of twenty shop foremen, from 150 to 200 years of experience in supervising men on the job is usually available. This great reservoir of experience is of far greater value than is ordinarily supposed. Through the pooling of this experience, exceedingly valuable material relative to foremanship can be developed and organized in ways which will make it of direct value to each member of the group and to the foremen as a whole as well.

Another detailed objective indicated under this general heading would have to do with helping each individual to

improve his supervision with regard to (1) completeness, (2) balance, and (3) distribution. This is an excellent illustration of the possibility of capitalizing upon the organization of group experience.

Illustration of the Fifth Type of Objective.—It often happens that a number of persons, as, for example, shop foremen, are jointly responsible for the completion or execution of jobs. In proportion as each individual concerned clearly understands his own responsibility and the relationship which it bears to the responsibilities of the other foreman or foremen, the job will go forward smoothly without misunderstandings or unnecessary delays. Cases involving joint responsibilities serve to promote constructive thinking concerning such matters in a conference of foremen. Very often, cases, where expensive delays due to misunderstandings have occurred in the past, can be thought through and analyzed with regard to the identification of the particular responsibility of each man involved. Such conference work tends not only to promote constructive thinking regarding the job; it often results in suggestions which can be passed on to the management and which result in improved methods of handling orders, ordering material, routing jobs through the shop, and checking up on jobs and orders, so as to make it unlikely that similar situations will arise in the future, in that particular shop at any rate.

CHAPTER III

THE JOB OF A CONFERENCE LEADER

Preliminary.—A conference leader has a very high-grade teaching job. This is true notwithstanding the emphasis placed in the preceding chapters upon the essential differences between ordinary teaching, or instructing, and conference leading. In dealing with groups of mature men of long experience on the job, the success of a conference leader depends very largely upon the degree to which he can function as a *teacher* without having the members of his group look upon him as a teacher or instructor whose job it is to teach them something which they do not know about their jobs. This means that the conference leader must carefully avoid ordinary class or lecture-room procedure. The ordinary relationship of teacher and pupil, according to regular school standards, must be avoided.

In the case of an informational meeting, it is perfectly obvious to all parties concerned that the meeting is held for the purpose of listening to a speaker. In the case of ordinary instructional or teaching procedure, the relationship of teacher and pupil, or instructor and learner, is recognized and accepted without question. In the case of a conference, however, the leader is confronted with a situation that calls for a relationship which is entirely different from either of the preceding.

Proper Working Relationships Essential.—A conference leader must first of all secure the confidence of his

group. He must establish a relationship with his group which involves mutual trust and respect. The members of a conference group must be entirely at ease. They must be neither self-conscious nor under any formal or artificial restraint. This is necessary because it is important to promote a great deal of active thinking in a conference and it is desirable for each and every group member to express his ideas freely and openly, *without stopping to think twice*, wondering if what he wants to say is the correct thing.

Leader Must Think Ahead of Group.—The conference leader must guide and direct the discussion without expressing too many opinions himself. In his work he should at least *appear* to be perfectly at ease. He must, however, try to think *a little ahead* of his group and he should carefully evaluate all facts, opinions, cases, and other data supplied by the men, and organize the important points which have a bearing on the problem under discussion. The free use of a blackboard or large sheets of paper is recommended for this procedure of organizing the functioning information.¹ Good blackboard work by the conference leader is valuable in that it tends to promote thinking and the crystallization of opinion on the part of the group members. Without the use of a blackboard or large sheets of paper used as a substitute for a blackboard, a conference leader has a difficult job keeping his group under control. If all pertinent facts, opinions, and other data are jotted down on a blackboard where the entire group can see them, it is much easier to promote thinking and summarize discussions than it is where no blackboard work is done.

The Time Element.—A conference leader should always avoid short-circuiting the thinking of his conference group.

¹ Samples of actual blackboard work are reproduced on pages 156 and 171.

Ability to permit the men to think their problems out themselves is a valuable asset. In other words, a conference leader needs a great deal of patience. It is not easy for a person who is accustomed to ordinary teaching to keep his opinions to himself and guide and direct a group of men in their thinking, when he knows what result will be arrived at after an hour or two of discussion and analysis work. To short-circuit all of this thinking relative to a problem and proceed to tell or teach the group what the sensible and correct solution should be, defeats the principal objective of conference work. To think a man's problems out *for* him and then tell him what to do is a smaller educational service to him than to stimulate his own thinking so that he will develop the ability to use his own head on his job. While this ability is desirable for all jobs requiring judgment, it is particularly valuable for men who have the responsibility of supervising the work of other men.

A Conference Not a "Gab-fest."—The view has been expressed, by some persons not familiar with conference procedure, that a conference is a sort of aimless and unsystematic "gab-fest" where a group of men sit around and talk things over without getting anywhere. If any conference (?) has these characteristics, one thing is certain: the leader (?) is wholly incompetent. It does not follow, however, that the conference procedure is worthless. It is not at all uncommon to find incompetent men in almost any field of work. If a person is so unfortunate as to hire an incompetent carpenter to shingle the roof of his house and the roof leaks in a dozen places during the first heavy rain, that is no reason why he should condemn the use of shingles on the roofs of houses or make claim that there are no carpenters who can do a good job of shingling a roof.

Other Responsibilities of Leader.—In addition to the actual work of conducting or operating conferences, a conference leader has other duties and responsibilities, such as:

1. Planning for individual conferences.
2. Planning for a series of conferences.
3. Preparing auxiliary material.
4. Evaluating the results of conference work where this is possible and desirable.

These auxiliary or supporting duties are discussed in the following paragraphs.

Planning for Individual Conferences.—The statement has previously been made that a conference leader does not teach, or “put over” subject matter or teaching content in the same sense that a regular instructor teaches a subject. The “content” dealt with in a conference, if such it may be called, is drawn out from the experience of the members of the group. In order to carry on this conference procedure, the leader must at all times know *what* he is trying to accomplish. This means that he must have his *objectives* clearly determined. It is inconceivable that a conference leader could succeed at all if he had not figured out in advance *what* he proposed to do with his conference group. In addition to knowing *what* he wishes to accomplish he must have a variety of ways and means thought out in order that he may have some idea of *how* he is going to accomplish his objectives.

Planning Necessary.—It should now be apparent that a certain amount of planning by the leader for each individual conference to be conducted is absolutely necessary. This does not mean that a rigid, inflexible outline of procedure should be prepared in advance and then rigidly adhered to. It does mean that the conference leader should

always determine his objective (or objectives) in advance and also prepare cases, questions, illustrations and points for discussion for use as the occasion may demand. A conference leader should also think out, in advance of each conference, the methods or schemes of organization or analysis to be used in handling his blackboard work. For beginners in conference leading, it is often advisable to put these data down on paper for reference purposes during the conference. Such a memorandum of procedure has been termed "The Conference Leader's Operating Sheet."²

Modified Procedure after Experience Is Gained.—As a conference leader gains experience and confidence in his ability to handle situations, he will need detailed operating sheets to a decreasing degree. This does not mean, however, that he will ever reach a point where he can afford to go into a conference without having thought his problem out in advance much more completely than would probably be apparent either to the members of the conference group or to a person observing the work of the conference. Flexibility and freedom from stereotyped procedure are characteristic of the best type of conference work. The more thoroughly a conference leader thinks his problems out in advance, the more likely he will be to conduct a conference which has this characteristic.

Principal Value of Planning.—It cannot be emphasized too strongly that the principal value which comes out of the work of planning for individual conferences is the effect upon the leader himself. Thinking the proposition through in advance and organizing his ideas concerning how certain phases of the work may be handled, constitutes the work of *preparation* for the conference leader.

² See "The Foreman and His Job" by Charles R. Allen, pp. 512-13.

If, when he meets his group, he finds that things work out differently from the way that he anticipated, the fact remains that he will have more self-confidence in dealing with the situation as it is, than he could possibly have if he had given the matter little thought in advance. The actual value of any paper plan, such as an operating sheet, is 90 per cent realized *when the plan is finished*. If a conference leader were carefully to work out his operating sheets and then throw them into the waste-paper basket after completion, he would still retain most of the value to be derived from making them out. The destruction of operating sheets is not recommended however; they have a value for purposes of reference, and a file of such material is of great value to any conference leader, regardless of the amount of his experience.

Planning for a Series of Conferences.—The planning which is necessary in connection with setting up a tentative program for a series of conferences has to do principally with determining the *general objectives* to be attained and the *order* in which they will probably be put over.

As was pointed out in the discussion dealing with planning for individual conferences, the principal value of planning lies in the fact that it helps the leader to think his work out in advance of meeting his group. General plans, as well as detailed plans for conference work, should be elastic. The advisability of having general plans extremely flexible may be illustrated by two cases from actual experience.

Case 1.—In a certain plant manufacturing automotive electrical equipment, all of the jobs and operations had been thoroughly and completely standardized. In this plant no time was devoted to job analysis as such, even

though general plans for a series of foreman conferences would ordinarily include certain objectives which are, in most cases, accomplished by means of conference work on job analysis. To have followed general stereotyped plans in this case would have been a foolish waste of time and effort.

Case 2.—In connection with a series of foreman conferences in a certain railroad shop, conditions warranted an unusual amount of time and attention to the handling of orders of various types. As a matter of fact, the foremen kept coming back to this subject repeatedly in connection with the discussion of other topics. To have followed a rigid plan in this case, devoting only four to six hours to the question of orders, would have made it impossible to carry through most of the profitable work that was done.

Suggestions as Regards General Planning.—A certain amount of general planning with respect to the *order* in which the various aspects of foremanship will be discussed in a series of conferences, is worth while. In connection with this phase of planning work, there are certain facts which should be reckoned with, however. Some of these facts are as follows:

1. Most groups of foremen are more or less *suspicious* at the beginning of a series of conferences.
2. There is a very real *danger of offending the job pride* of competent foremen or supervisors.
3. It is *safer*, in the beginning of a series of conferences, to work with questions, problems, and cases that involve the relationships which exist between the foremen and their men, than it is to attempt to deal with matters which involve cooperation between foremen, or relationships with the higher plant executives.
4. Most, if not all topics or objectives which deal with

the foreman's own job and his responsibilities are *much easier to handle* than topics which involve more complex relationships.

5. It is necessary for a conference leader to *gain the confidence* of his group. This should be accomplished as soon as possible after beginning the work of the conference. This is probably the most important objective in the first few meetings.
6. Regardless of what sequence of topics may be decided upon in connection with the general planning, it is very probable that the leader will find it necessary to change this sequence more or less as he progresses with the work. A general plan or outline of work prepared in advance should, therefore, be considered as tentative only.

Interest the Controlling Factor.—It is, in the opinion of the author, exceedingly poor practice for a conference leader to adhere rigidly to a stereotyped outline. The actual values derived from conference work are in direct proportion to the *interest* of the group members. Successful and experienced conference leaders do not hesitate to scrap their pre-arranged plans, outlines, and operating sheets, and figure out a different procedure right in the midst of a conference, if such a move seems to be necessary in order to hold the interest of the group. In the experience of the author, this has happened a great many times. Topics or questions which, from a theoretical standpoint, ought to have “gone over” in a big way, have been dropped temporarily like a hot potato, and the attention of the group directed along an entirely different line. Such a move on the part of a conference leader does not necessarily mean that he will drop the subject permanently. In most cases

the same subject will again be tried out one or more times by approaching it from entirely different angles.

Leader Must Know His Objective.—A conference leader who has his *objective* clearly in mind can handle his work in the manner indicated in the preceding paragraph if he is sufficiently resourceful on his job. For the work of leading a conference, there is no acceptable substitute for a man who will use his head on the job according to the conditions that prevail. It is, of course, desirable for a conference leader to have “on tap” a large number of cases, illustrations, anecdotes, and stories which may be used as the occasion requires. Very often some illustration or case supplied by the leader, or even a suitable story thrown in when the conference gets “wobbly,” will serve in a valuable manner to help matters along.

Preparing Auxiliary Material.—The question of the use of auxiliary material is one regarding which there is a wide difference of opinion. On the one hand, the use of printed text material is advocated, while on the other hand successful conference work is being done without the use of any auxiliary material aside from reports of meetings or conferences held.

Kinds of Auxiliary Material.—The principal kinds of auxiliary material that have been found to be of value for conference work are as follows:

1. Lists of selected cases.
2. Questions and points for discussion.
3. Analysis forms, many different types.
4. Checking lists (laundry-list forms).
5. Text material (instruction notes).
6. Reports of meetings.

Sources of Auxiliary Material.—In addition to the auxiliary material included in Chapter XI of this book,

"Samples of Conference Material" much valuable auxiliary material is included in Allen's "The Foreman and His Job." Reports of foreman conference work issued by the Trade and Industrial Education Service of the Federal Board for Vocational Education and other agencies constitute an exceedingly valuable source of such material.

Suggestions Relative to the Preparation of Material.—

In the opinion of the author, it is advisable for a conference leader to proceed slowly in the development of new auxiliary material. It is better procedure to utilize existing material which has been tested out in practice, than it is to overwork the idea of preparing new material. As a conference leader gains in experience he will naturally accumulate cases and illustrations which he can use in subsequent work. The attention of conference leaders of limited experience, however, is drawn to the extreme desirability of using recognized source material, especially for analysis forms and text material. In other words a conference leader should avail himself, so far as possible, of all existing material that will assist him in doing a good job. He should not get the idea that extreme originality in this field is the thing most of all to be desired.

Reports of Meetings.—Experience has indicated very strongly that reports of meetings serve a worthy purpose. The time and expense involved in preparing a report of each conference session is amply justified by the effect which such a procedure has upon the group. In the experience of the writer, the best plan is to prepare a summary of each session or meeting so as to have mimeographed copies ready for distribution to the men at the succeeding session.

Stenographic Record Not Desirable.—Complete stenographic reports of conferences of the type under discussion

in this chapter are of negative value. The mere presence of a stenographer in such a meeting tends to inhibit free discussion. Most persons will think twice of they know that a verbatim record is being made of what they say. Moreover, a complete stenographic report of a conference of this type would be of little if any value to anyone after it was completed.

Condensed Report Recommended.—The kind of report which has been found to have a definite value is a condensed descriptive report of the ground covered in the conference work. Certain blackboard work, charts, analyses, and diagrams may also be included in the report. In many instances, such charts or layouts are worth saving. Wholly aside from the intrinsic value of the material, however, the preparation of a report is worth while because of the psychological effect which it has upon the group members, if for no other reason. A sample of a good descriptive report of a foreman conference session is reproduced on pp. 175 and 179.

Summarized Statement of the Job.—A conference leader is likely to be successful in his work in proportion as:

1. He knows his objectives.
2. He has thought his work through in advance of meeting his group.
3. He succeeds in establishing good working relationships with his group.
4. He avoids posing as a teacher or a professor.
5. He stimulates and guides discussion related to his objectives.
6. He promotes and encourages active constructive thinking on the part of his group.
7. He secures or prepares suitable auxiliary material for use in conferences.

8. He notes down and organizes on a blackboard or paper chart the important points brought out in the conference, for the purpose of stimulating thought on the part of the group and helping them to arrive at sound conclusions.
9. He avoids imposing his own views and opinions upon the group.
10. He practices good methods of conference management in order to keep his group under control without apparent effort on his part to dominate the situation.
11. He respects the confidence of the group members and avoids gossip.
12. He conducts himself naturally but with a certain amount of reserve. He avoids making himself cheap.
13. He avoids being pedantic and refrains from embarrassing members of his group when they happen to know less than he knows about certain things.
14. He respects the intelligence and good taste of his group and consequently avoids the use of cheap jokes, profanity, and questionable stories to illustrate his remarks.
15. He makes every conference session both interesting and profitable to the group members.
16. He keeps track of the work done and the ground covered at each session for the purpose of preparing a report.

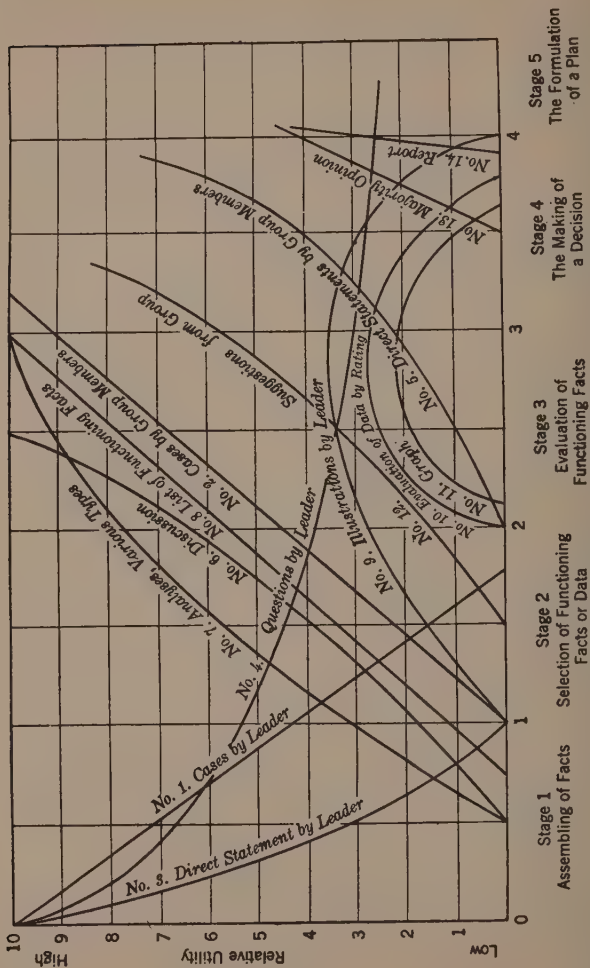
CHAPTER IV

CONFERENCE DEVICES AND THEIR USE

Preliminary.—The essential steps or stages in the conference procedure have already been stated on page 6. A conference may be considered as a method of procedure for securing (a) intelligent, constructive thinking in terms of practical phases of a man's job; (b) sound conclusions, arrived at as a result of such thinking; and (c) more intelligent and improved procedure on the job as a result of making the conclusions or decisions effective in practice.

Conference Devices.—In carrying out this conference procedure there are certain devices that have been found to be of value. A conference leader should be thoroughly familiar with these devices and know when, where, and how to apply them in conference work. The more important conference devices are as follows:

1. Cases by leader.
2. Cases by group members.
3. Direct statements by leader.
4. Questions by leader.
5. Direct statements by group members.
6. Discussion.
7. Analyses, various types.
8. Built-up list of functioning data.
9. Illustrations by leader.
10. Evaluation of data by rating.
11. Graphs.



The Relative Utility of Common Conference Devices.

12. Suggestions from group.
13. Majority opinion.
14. Summary or report.

DETAILED DISCUSSION OF CONFERENCE DEVICES

1. CASES BY THE LEADER

It is desirable, if not absolutely necessary for a conference leader to have an assortment of cases for use in stimulating discussion on a given question, problem, or topic. Cases used for this purpose may be classified under two main headings: (a) real or actual cases, and (b) hypothetical cases. Hypothetical cases, as a rule, are of less value and utility than actual cases which the conference leader has accumulated ¹ either through his own experience or from some other source. A hypothetical case, as the name indicates, is artificial or imaginary. Real cases may be used without necessarily mentioning the names of the plants or organizations where the cases occurred.

2. CASES BY GROUP MEMBERS

It is not to be expected that group members will cite cases *at the very beginning* of a conference. Actual cases by group members constitute, however, about the most valuable material that is dealt with in a conference. When a group of foremen begin to submit for discussion actual cases from their own departments, it is a very good indication that the conference leader has established the proper working relationships and that he has gained the confidence of his group.

¹ A list of actual cases which have been found to be of practical value in conference work are given on pages 149-170.

Dangers to be Avoided.—It is particularly important for a conference leader, especially if he is an outside man, to deal with actual plant cases carefully and cautiously. It is not at all uncommon for a group of foremen to present cases for the purpose of getting the conference leader to express an opinion or to render a decision. It is usually safe practice to let the foremen discuss such cases fully and freely, but the leader may easily impair his usefulness as a conference leader by taking a decided stand, *pro* or *con*. Conference leaders need to apply a great deal of common sense, tact, and good judgment in handling the discussion of actual plant cases, especially where they may involve some criticism of a superintendent or other person higher up in the organization.

3. DIRECT STATEMENTS BY LEADER

Direct statements or assertions by the leader have a limited value in conference work. Critical evaluation of successful conferences indicates that direct statements by a leader are occasionally used at or near the beginning of a conference. They are seldom used except during the first stage, i.e., the initial work of assembling data.

Too Many Direct Statements by Leader Inadvisable.—Too many direct statements or assertions, followed up by direct questions, tend to delay if not to prevent the best sort of conference procedure and to turn the so-called conference into an informational meeting. By overworking this device the leader tends to function as a lecturer and quiz master instead of as a leader of discussion. A conference leader should constantly keep before him the fact that his principal function is to assist his group in their thinking. For a leader to think a problem out himself and then make

a direct statement covering the situation is the very antithesis of good conference leadership.

The chief value of the direct statement by the leader as a conference device lies in its use for such purposes as, (a) getting the problem, question, or topic clearly defined at the beginning of the meeting, and (b) clearing up misunderstandings as to the type or class of data requested from the group members.

4. QUESTIONS BY LEADER

The question is probably used more frequently in conference work than any of the other devices listed. For purposes of critical evaluation of conference procedure, questions may be classified into two principal groups: (a) direct questions, and (b) overhead questions.

Direct Questions and Overhead Questions.—A question may be classified as *direct* when it is addressed or directed to a particular individual. An *overhead* question is one that the leader addresses to the group as a whole. Both types of questions have a place in conference work.

Informational and Suggestive Questions.—Both direct and overhead questions may be either informational or suggestive. As a rule informational questions are used simply for the purpose of securing information. For example, if a conference leader were to ask the following question of a particular man, it would be a *direct informational* question:

“Mr. B., how many men have you in your department?”

The following is an example of an *overhead informational* question:

“How many men present have had more than five years of experience as foremen?”

In both of the preceding cases it is apparent that the purpose back of both questions is to secure certain information.

Suggestive questions are used when the purpose of the question is to suggest something to the mind of the person or persons to whom the question is addressed. As previously stated, suggestive questions may be either direct or overhead questions in conference work.

Example of a *direct suggestive* question:

“Mr. B., why should you feel any responsibility for the quality of the material supplied to your department?”

This question would suggest to Mr. B. that he has a responsibility relative to this matter. He may not have thought much about it however.

Example of an *overhead suggestive* question:

“Do you men think that there are very many points of similarity between your responsibilities and those of the superintendent?”

This question would suggest to the group that there were many points of similarity. Subsequent discussion should bring out the fact that the responsibilities of a foreman are essentially the same as those of the superintendent, the principal difference being in the scope of the responsibilities, not in the *kind* of responsibilities.

Value of Questions.—Questions of all of the above-mentioned types have been found to be useful throughout the entire conference procedure. Questions probably have a higher service value during the first stage of a conference

than they do in subsequent stages. They are, however, of considerable utility during the second stage and of almost as much value throughout the succeeding stages. The skill of a conference leader is exemplified probably as much in the manner in which he utilizes questions as it is in any other phase of his work.

5. DIRECT STATEMENTS BY GROUP MEMBERS

The direct statement by a group member does not, strictly speaking, constitute a device used by the leader. However, because of the fact that direct statements will be made by group members from time to time in most conferences, it is deemed advisable to include in this discussion a few points regarding the so-called device as it is an element with which a conference leader must deal.

When to Expect Direct Statements and What They Indicate.—It does not often happen that group members make definite direct statements during the first or second stages of a conference. Naturally such statements would be expected after a question had been quite thoroughly discussed and the group members had approached a conclusion or decision relative to the problem, question, or topic under consideration. As a matter of fact, direct statements by group members usually indicate either that they have reached a conclusion as a result of the conference work or that their minds were made up beforehand. It is not at all unusual to encounter persons in conference groups who allow their thinking processes to be arrested by prejudice, bad temper, a grouch, personal likes or dislikes, or similar factors. A third possibility is that a statement by a group member may indicate nothing more than progress in his thinking. He may change his opinion and make other comments or statements before the end of the

conference which will indicate an entirely different slant on the question.

6. DISCUSSION

The discussion of problems and cases is one of the outstanding characteristics of real conference work. It is practically impossible to conduct a conference at all if the "conference ammunition" used by the leader results in no discussion by the group.

Characteristics of Conference Discussion.—Discussion involves interchange of opinion, informal debate or argumentation, comments, and questions and answers.

Conference discussion should be informal. To introduce formalities, such as recognition by the leader before speaking, standing up before making remarks, and similar parliamentary procedure, is both unnecessary and undesirable in a conference of the type under discussion in this book. Experience with conference work has established the fact that the most profitable type of discussion is developed in an atmosphere of informality. Such informal procedure is possible with groups of suitable size, not exceeding twenty persons. With larger groups it is, of course, impossible to carry out the idea in practice.

The Leader Must Retain Control.—The type of informal conference discussion indicated in the preceding paragraphs is likely to wander almost anywhere unless it is directed or controlled by the leader. It is necessary for the leader to do this directing without being domineering or sarcastic, and it is probably true that a leader's skill is manifested as much by the way he controls and directs discussion as it is by any other phase of his work. A leader's ability to control discussion of any particular topic is increased in proportion as he has thought the mat-

ter through to a considerable extent in advance of meeting his group. A supply of cases of all types is an extremely desirable thing to have in reserve. Questions, properly chosen and well timed, constitute another valuable means of controlling discussion and "getting it back on to the main track after someone has switched it off." Illustrations, including suitable stories, are also very often useful in this respect.

As stated before, conference discussion ought to be carried on informally with very few restrictions, of which the following are samples:

1. The discussion should have some bearing upon the question, problem, case, or topic being considered.
2. Personalities should be entirely excluded.
3. The discussion should be well distributed. A few individuals, more talkative than the rest, should not be permitted to monopolize all of the time.

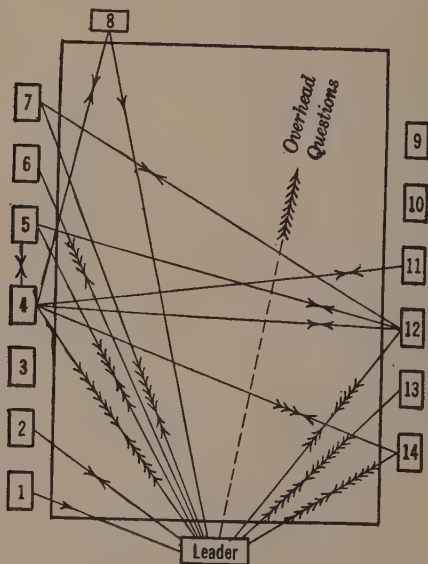
Distribution of Discussion.—The illustration on page 38 is a reproduction of an actual diagram worked out in a conference of prospective conference leaders. It covers the first thirty-five minutes of work on the topic, "Training Green Men," in a practice conference conducted by a member of the group. The distribution of discussion was fairly good although there were three members of the group who did not participate in the work in any way.

An arrowhead indicates a question, an answer to a question, or a comment. It may be noted that the leader used nine overhead questions² and discussed the questions raised principally with three of the group members. There was some exchange of comments between the leader and four other group members with a limited amount of cross dis-

² See page 33 for explanation.

cussion between different group members, independent of the leader.

Why the Informal Discussion Is Valuable.—As indicated in previous paragraphs, the conference as an educational procedure is of value in proportion as active con-



Reproduction of Check Sheet on Distribution of Discussion

structive thinking is promoted in terms of the jobs and the responsibilities of the group members. Discussion of the right type tends to promote this kind of thinking. The views or opinions of one man, when expressed, cause other group members to recall something in their own experience which is related to the problem or question under consid-



FOREMAN CONFERENCE
SACO-LOWELL SHOPS, BIDDEFORD, ME.
Note the charts on walls of room.

eration. When these experiences of other group members are expressed and utilized for the benefit of the entire conference, the procedure is beginning to function in the direction of the pooling of experience and the advancement of the thinking of the entire group.

Blackboard Work Important.—Good blackboard work by a conference leader is very effective and valuable in connection with the utilization of conference discussion for all that it is worth. As points are brought out in discussion, the leader should note them down on the blackboard. Oftentimes, discussion indicates that members of a group are floundering around more or less in their thinking. At such times the leader can usually assist in heading up the discussion by asking a few pertinent questions and then jotting items down on the blackboard. Blackboard data should be organized or arranged in the most effective manner possible. Good items or valuable data can easily become of little value if they are poorly set up on a blackboard. The same data, arranged so as to make it easy to see the relationships which are to be emphasized, can be made of very great value in advancing the work of a conference.

7. ANALYSES

Analysis means separating a thing into its component parts. In a classified analysis the various items or parts are grouped according to some predetermined plan.

Analysis figures largely in most conference work with foremen, supervisors, and instructors, because most of the procedures followed are based upon analysis or some application of analytical methods.

Principal Kinds of Analyses Used.—The following kinds of analyses have been found to be of definite value in conference work:

a. The Job Analysis.

Example:

Unit: Departmental Job.

1st breakdown, list of payroll jobs in dept.

2nd breakdown, list of work jobs for each payroll job.

3rd breakdown, list of operations for each work job.

4th breakdown, list of operating points to be covered for each operation.

5th breakdown, classification of operating points under:

(a) Human

(b) Mechanical.

b. The Responsibility Analysis.

Example: An inventory of the supervisory responsibilities of a foreman.

c. The Job Specification Analysis.

Example: An analysis of job requirements for the purpose of setting up such job specifications as are commonly used by employment managers.

d. The Analysis of Production Difficulties.

Example: Tracing out the path of material as it moves through various departments, identifying and locating errors or bad work, the effects upon the quality of product turned out by succeeding departments, and the ultimate effect upon the final product.

NOTE: Analyses of this type would ordinarily be handled in conjunction with conference discussion involving identification of the responsibilities of the foremen or supervisors through whose departments the material was handled.

e. The Analysis of Trade Content.

Example: An analysis of a skilled trade giving a series of progressive type job specifications together with such related technical content as goes along with the type jobs as listed.

f. The Analysis of Learning Difficulties.

Example: The identification of the factors or elements which tend to make a given job or group of jobs difficult *to learn to do*, wholly independent of the production difficulties involved.

g. The Pro and Con Analysis.

Example: An inventory of the positive and negative factors or, in other words, the advantages and disadvantages which should be carefully weighed and evaluated before arriving at a decision on an important question.

h. Case Analysis.

Example: Identification of the essential facts or elements involved in cases of:

- (a) Carelessness on the job.
- (b) Accidents.
- (c) Cooperation between foremen.
- (d) Other matters involving human relationships.

While the eight types of analysis included in the foregoing list do not comprise *all* of the kinds of analyses which might be used in conference work, they are at least the principal ones which have been found to have a definite value in conference work with foremen, supervisors, and vocational teachers.

When to Apply Analysis in Conference Work.—It is extremely improbable that any reliable rule could be laid

down whereby a conference leader could anticipate "when and how much" analysis work should be attempted in connection with a given conference topic or objective. Certain kinds of analyses can be started immediately at the beginning of a conference. Other kinds cannot be started until there is something before the conference which can be analyzed to advantage. In ordinary conference work the value of analysis of some sort becomes apparent at approximately the second stage of conference procedure, and in most cases the value increases as the conference progresses through subsequent stages.

Samples Frequently Used.—The fact should be self-evident to persons who have had anything to do with the preparation of complete Trade Content Analyses (Type 2), that it would be impracticable with a conference group to do more than to work out a small sample. Such work is sometimes justified because of (1) its training value and (2) the appreciation secured. Detailed trade analyses are best worked out by a very small group (two or three persons).³ It is extremely doubtful if the making of a

³ Among the trade content analyses which have been published the following are good examples:

Federal Board for Vocational Education

Bulletin 52, Theory and Practice of the Machinist's Trade—
Allen & Cushman.

Bulletin 67, Analysis of the Pottery Industry—Smith.

Bulletin 69, Analysis of the Railway Boilermaker's Trade—
Cushman.

Bulletin 95, Bricklaying—McGarvey.

Bulletin 102, Paper Hanging—Tiemann.

University of California, Division of Vocational Education.

Analysis of the Plasterer's Trade—Lewis.

Analysis of the Cabinet Maker's Trade—Stier.

Analysis of the Auto Mechanic's Trade—Lewis.

Analysis of the House Carpenter's Trade—Stier.

complete trade content analysis could be considered as a legitimate conference objective with a group of fifteen or twenty persons.

The Use of Analysis Forms.—Printed or mimeographed forms are very often of great value in carrying on analytical work with conference groups. Because of the fact that many good examples of analysis forms may be found in recent books,⁴ it is not necessary to reproduce such forms here.

8. BUILT-UP LIST OF FUNCTIONING FACTS

This phase of conference work, while extremely important, has to do entirely with blackboard work by the leader. The importance of good blackboard work has already been referred to in preceding paragraphs. It is, of course, apparent that any list of functioning facts would be built up on the blackboard in connection with questions, analyses, and the discussion of cases.

9. ILLUSTRATIONS BY LEADER

There is no sharp line of demarcation between cases and illustrations. Most cases which are used by a leader to illustrate a point could just as well be classified as illustrations. Because of the fact, however, that cases are used for purposes other than to illustrate points, together with the fact that all illustrations are not cases, it seems to be advisable to consider the illustration as a separate conference device.

Examples of the Use of the Illustration.—A discussion between two or more group members has progressed to a

⁴“The Foreman and His Job”—Allen; “The Instructor, the Man and the Job”—Allen; “Supervision of Vocational Education”—Wright and Allen.

point where it appears that there is a misunderstanding between them. The leader breaks in with the remark, "Let's see now, I wonder if Mr. ——— means to express something like this," followed by an analogy, an anecdote, or story or some remark which serves to illustrate a point involved in the discussion. Frequently, sketches or diagrams are very useful in illustrating points in this connection.

10. EVALUATION BY RATING

Having secured an array of data or a list of facts pertaining to a conference topic, it is often desirable to evaluate certain of the items with respect to their relative importance, utility, desirability, or other element or standard. This device has its maximum utility in connection with stages 3 and 4 of the conference procedure, i.e., the evaluation of functioning facts and the reaching of a decision.

Ways in Which This Device Is Applied.—The evaluation of data or items may be carried through in several ways, among which the least effective is simply to talk about relative values. There are three principal methods which have been found to be serviceable in practical conference work.

- a. Arranging the items or data in the order of their relative importance or utility.
- b. Rating the items just as they happen to occur, using an arbitrary scale and assigning numbers to each item considered.
- c. Using some form of graph or chart.

Relative Value of the Three Methods.—The first method listed above is open to the objection that a considerable amount of copying, transferring, and moving

about of the data is involved. If one of the objectives is to secure well-arranged charts or graphs, this method is all right. On the other hand, an undue amount of time spent by the leader on such detail work is likely to diminish the interest of the group. So far as the principal values of the procedure are concerned, the simplest and most easily applied method is the best.

The second method has worked well in practice. By using an arbitrary scale from 1 to 10, data can be evaluated very quickly with no time devoted to copying and transferring items. In practice it has been found desirable to let (1) represent the lowest value and (10) the highest value.

The third method is really supplementary to the first or the second. Obviously, the *rating* would have to be completed before the graph could be drawn. Some samples of graphs will be found on pages 146 and 147.

11. THE GRAPH

The application of the graphical presentation of data in connection with some scheme of rating has already been referred to in the preceding paragraphs. The graph is listed as a separate conference device because the evaluation of data may be accomplished with or without its use.

12. SUGGESTIONS FROM GROUP

This factor in conference work is in many respects similar to No. 5, "Direct Statements by Group Members." The leader does not ordinarily initiate either of these factors although he may do so indirectly by means of leading questions. Both direct statements and suggestions from

group members are, however, factors in conference work with which a leader must deal.

The Time When Suggestions Are Most Likely to be Made.—Suggestions from group members are more likely to be supplied during the third and fourth stages of a conference, when the individual members and the group as a whole are searching for a decision, than at any other stage of the work.

Practical Hints Relative to Utilization.—Successful conference leaders recognize the fact that there are plenty of good reasons for differences of opinion on most questions, especially those involving the human element. It is no part of the job of a leader to “hang on” to a problem or question in an attempt to secure unanimity of opinion. In fact there may be no more reason why all of the members of a conference group should reach the same decision than there is reason why they should all be Democrats or all Republicans, or that they should all belong to the same church.

The principal characteristic of good conference work with respect to this feature is to arrive at a point where every individual in the group has been stimulated to do some thinking for himself. In other words, each group member should think and arrive at a decision as a result of his own thinking, modified of course by the views, opinions, and experiences of the other members of the conference.

Too many suggestions involve the danger of starting an unprofitable argument, hence the leader should endeavor to keep the situation in hand sufficiently to prevent such a development.

In many instances the best procedure is to leave a decision “hanging up in the air.” In other words, there is a

real danger in talking too much in leading a conference, in much the same way that there is in other practical situations.

13. MAJORITY OPINION

The point cannot be too strongly emphasized that the value of the conference, as an educational procedure, is discounted in proportion as it is formalized. Parliamentary procedure really has little if any place in such a conference. To have motions or questions voted on by the group is usually unnecessary and undesirable. Ordinarily, no vote should be taken on any question until every member of the group clearly understands it and has had an opportunity to reach a decision. Such being the case, the expression of opinion by voting or questions logically belongs in the fourth stage of a conference.

Exception to the General Rule.—An experienced conference leader may occasionally use this device right at the beginning of a conference. A novice, however, is advised to try a safer procedure.

Example: The general topic for a particular conference is cooperation between foremen. The leader starts the work by using an overhead question as follows: "Should a foreman ever give orders to men who are responsible to another foreman?" Any average group of foremen will almost instantly react negatively. The leader then follows up with this question, "How many of you men think that a foreman should give orders to men who are responsible to another foreman?" The leader raises his hand but not one of the foremen follow him. The leader then says, "How many of you men are of the opposite opinion?" In most cases the entire number will vote solidly for the negative side.

This sets up a situation where the leader is confronted with the job of dealing with his group from the standpoint of making them change an opinion already publicly expressed. When the leader brings up cases illustrating real cooperation where a foreman *did* direct men responsible to another foreman,⁵ there is some danger that the group members may feel that they have been trifled with. In other words, there may be developed a negative attitude toward the whole conference idea as a result of the procedure followed.

In this case judgment would dictate that no vote be taken in the later stages of the conference. The leader should be satisfied in his own mind that the original opinions have been modified but it would probably be best for him to leave the decision "hanging up in the air" so far as any announcement of the fact is concerned. A much safer method of handling the same question, for leaders who have had limited experience, would be to avoid any expression of majority opinion, at least until the various sides of the question had been clearly brought out and thoroughly discussed.

14. SUMMARY OR REPORT

A summary of discussion, elsewhere referred to as a report of meetings held, is an important factor or element in the success of a program of conferences.

Some samples of foreman conference reports are given on pages —— of this book.

⁵ See case 4 on page 168.

CHAPTER V

SUCCESS FACTORS IN CONFERENCE WORK

Preliminary.—Successful and profitable conference work with any group is dependent upon a number of factors, of which the following are perhaps the more important:

1. Company policies.
2. Leadership.
3. Working conditions.

These factors are discussed separately and in considerable detail in the following paragraphs.

Company Policies.—One of the most fundamental ideas back of the whole plan of conference work with groups of foreman, supervisors or other minor executives, is that the work shall be carried on largely through a full and free discussion of actual cases and plant problems. The purpose back of this procedure is to assist the group members to develop their ability to think constructively and intelligently on their jobs to the end that they may have a real basis for interest in the better performance of their work and the better meeting of their job responsibilities. This kind of work cannot be successfully carried on where an atmosphere of suspicion, uncertainty, and fear prevails. It can be carried on where the fundamental policy of the plant is based upon a square deal for all parties concerned.

Favorable Plant Policies Fundamental.—The “atmosphere” which prevails in any plant or organization is largely a reflection of the personality of the executive at

the head of the concern. Where the management deals fairly, openly, and above-board with the working force and consistently applies the "square deal" in everyday practice, the fundamental conditions are favorable for a program of education and training for foremen and employees. Where the management is hard-boiled, underhanded, can see nothing but a column of figures, and subordinates everything to the grinding out of the last possible cent of profit from a force of unhappy employees, regardless of the consequences, conditions are hardly favorable for a program of education and training.

It is generally true that the second type of plant *needs* a program of education and training more than a plant of the first type. The logical point of beginning for a program of education in a plant of the second type, however, would be with the management itself. Efforts to do constructive work with the foremen in such an organization would, in all probability, yield no tangible results. Fortunately for conference leaders connected with the work of the public program of vocational education, plants of the first-mentioned type are usually the ones that ask for help in establishing foremen-conference work and other forms of education and training for their employees.

Desire for Improvement Essential.—Profitable conference work can be carried on in a plant that has some of the characteristics of the second type referred to in the preceding paragraph, *provided* the management has a *sincere* desire to improve the morale of the foremen and of the working force, and is willing to *do its share* in bringing about better conditions. No program of foreman conferences can accomplish the impossible. The building up of plant morale is a hard job and much time is required for its accomplishment. Provided the management of a con-

cern is definitely committed to the "square deal" and all that it implies as an *active policy*, a program of foreman conferences may and probably will be of definite and lasting value in building up the morale of the working force and securing increased efficiency on the job.

Competent Leadership.—Satisfactory results from conference work may be expected in proportion as competent leadership is available. There are many factors that have an important bearing on this question of leadership. Some of the important qualifications of conference leaders are *indicated* in the summary of the job of a conference leader on page 27. In the following paragraphs attention is called *directly* to certain qualifications and characteristics which it is important for a conference leader to possess.

Personal Characteristics.—One of the fundamental requirements for successful conference work, especially with industrial groups, is that the leader should be a real "he man." This does not mean that he needs to possess or to assume coarse or vulgar habits of manner or of speech. It does mean that he should possess the more important attributes and traits of character of a real gentleman. He must be able to command the respect of a group of men without saying anything about his own importance and without any exercise of authority.

Another essential qualification for a conference leader is intellectual honesty. He must deal with all questions, cases, problems, and other matters which are discussed under his leadership in a perfectly straightforward and honest manner. He should never attempt to "bluff his way along" with a conference group. He should, in other words, be genuine. This does not mean that a conference leader does not need to exercise tact. There are times when he must, to all outward appearances, be deaf, dumb, and blind. He

must have, and apply on his job, a whole lot of common sense and he must be able to judge with considerable accuracy, when there is danger of destroying his usefulness by talking too much.

To be successful as a conference leader, it is absolutely necessary for a man to be a good listener. So far as the writer is aware, no person who thinks that all of the time is wasted when he himself is not talking has ever made a success of real conference work. This ability to listen involves the quality of patience, and of this, a conference leader needs a large supply. It is a much easier job to figure a thing out and then *tell* a group of men all about it than it is to help them to think it out for themselves in terms of their own experience.

In addition to the characteristics mentioned in the preceding paragraphs, many other desirable qualifications could be discussed in detail.

Actual working experience in industry tends to give a person a point of view and an appreciation of practical human relationships which is a real asset for a conference leader. Ability to mix with men without making one's self cheap, and the habit of dealing with people courteously and fairly, are likewise important.

A conference leader should not get the idea that he is called upon to play the part of a reformer. Such an attitude of mind on his part is more than likely to result in his meddling with matters which should properly be left to others in their own fields of authority. A rather crudely expressed bit of advice which, however, exactly expresses the important idea at this point is as follows. *Don't slop over into the field of authority of the superintendent or other executive officers of the organization in which you are trying to carry out a program of conference work.*

Special Abilities Needed.—The preceding paragraphs set forth some of the more important personal characteristics which experience has shown to be desirable for those who would be successful in this special field of educational work.

In addition to such personal qualifications as these just mentioned, there are certain special abilities which can be acquired, to some extent, by means of training and experience.

Perhaps the most important of these special abilities is the ability to conduct conference work. This ability presupposes a working command of the special information concerning conference methods which has been secured and made available through the experience of others. Another special ability which, however, is subsidiary to the ability to run a conference, is the ability quickly to evaluate cases, questions, and situations as they come up, and determine how best to handle them. This is often a most difficult phase of the work of running a conference, and the manner in which it is handled indicates the skill of the leader. It is exceedingly poor practice to “stall,” and a leader cannot afford to get rattled.

Ability to deal with different types of people and to talk to them easily and naturally in their own languages, is another valuable asset. Nothing fails to “go over” any more completely with a group of practical men than a bluff by a leader who is trying to assume characteristics which he does not really possess. Ability of the type mentioned at the beginning of this paragraph is more the result of actual participating experience in industry and a wide contact with industrial life than it is of any plan of training.

Working Conditions.—Good working conditions are essential to the successful carrying on of profitable conference

work. As used here, the term "working conditions" covers such items as facilities for doing the work and the time necessary for doing it.

Room, Furniture, etc.—A suitable conference room is necessary. The rooms used by the writer have been of many types, ranging from a vice-president's office with mahogany furniture to a corner of a pattern shop partitioned off by tarpaulins, and including a dining car set out on a side track in a railroad yard. The type of room is not important, provided it is comfortable and well lighted. The room should be large enough to accommodate the necessary number of tables and comfortable chairs. Experience indicates that there are definite advantages involved in seating the men around a table and allowing plenty of elbow room for each man. Folding chairs arranged in rows are very unsatisfactory for conference work.

A good blackboard, well lighted, is an absolute necessity. A supply of sheets of paper about 3 by 5 ft. is also desirable. It is advantageous to have wall space available for keeping certain charts in sight during the period of the conference. While some of the blackboard work done will have no permanent value and therefore may be erased, other work, such as analysis charts, graphs, rating tables, etc., is very often worth saving for several days or weeks. It is, therefore, an advantage to use paper for some kinds of "blackboard work."

Size of Groups.—For the best results, conference groups should be limited as to the number of men enrolled. It is difficult to get the best results with fewer than ten men in a group, and when the number is increased to more than twenty, other difficulties are encountered.

Freedom from Artificial Restraint.—In view of the fact that a conference is a type of organization set up for the

purpose of helping a group of men to analyze their jobs, identify their responsibilities, pool their experiences, and think out their problems, the degree to which the men are at ease and feel free from all artificial restraints determines the probability of doing worth-while work. In other words the men should feel "at home." Many foremen can think better and will take a more active part in the work of a foremanship conference if they are perfectly free to smoke when they wish to. There should be no "rules" in a foremanship conference. It is sufficient to let it be understood that the discussion and, in fact, all of the conversation while in conference, shall be confined to the foreman's job and its responsibilities. With this understanding, which can easily be secured without making an announcement, a competent conference leader can handle all situations as they arise.

Time Arrangements.—The total amount of time, which experience indicates as being desirable for an *initial series* of foremanship conferences, ranges from thirty hours as a minimum, to sixty or seventy hours as a maximum. This amount of time may be distributed in a great variety of ways. Satisfactory results have been secured under the intensive plan, devoting from three to six hours daily to the work for a period of two weeks. Another plan, which has proved to be satisfactory, calls for two or three meetings per week, each meeting being three hours in length, the series of meetings extending over a total period of four to six weeks.

Many other plans and time schedules are, of course, possible. There is an indefinite number of possible arrangements under which conference work has been successfully carried on. Some of the advantages and disadvantages of conducting the work on company time, on the men's time,

or under a combination plan, are discussed in the following paragraphs.

Arrangement of Program.—Foreman conference work has been successfully carried on under a variety of plans relative to the time of meeting. Generally speaking, however, there are three principal types of arrangements, as follows:

1. Meetings held on company time during the regular working day.
2. Meetings held on the men's time outside of working hours.
3. Meetings held under a combination plan—part company time and part men's time.

Meetings on Company Time.—A sufficient number of foremanship conferences has been held under the intensive plan, three to six hours per day on company time, to establish the fact that the plan is entirely feasible.

Certain advantages accrue under this plan. It is a recognition by the company that the improvement of supervision is a legitimate and clean-cut business proposition. This immediately classifies the work as a line of activity worthy of serious attention, rather than as an outside activity to be attended to by the foremen on their leisure time. If improvement on the job and better performance by the foremen were of benefit to the foremen *only*, it might be considered logical for the management to expect the foremen to attend foremanship conferences on their own time. While it is true that the men are benefited individually by a series of well-planned and successfully conducted conferences, the fact remains that the company which employs them is the chief beneficiary.

The plan of holding meetings on company time simplifies

the problem of attendance. Under this plan it is relatively easy to secure the attendance of those who most need the training. Where the meetings are held on the men's own time, the tendency is for the enrollment to be confined to the more ambitious and capable men.

Occasionally a plant superintendent is encountered who believes it to be impracticable to take foremen off of the job during working hours. As contrasted with this attitude, the superintendent of one plant stated that he did not wish for any foreman in his plant to have his department so poorly organized that it could not run without him for a few hours a day.

Whatever the attitude of a superintendent may be with respect to this matter, the fact remains that the holding of foreman conferences during the working day offers an opportunity to check up and determine the degree to which each foreman has organized his work and trained an understudy so that the work may go forward without interruption during his temporary absence.

In the opinion of the writer, better conference work can be carried on with men during the regular working day than is ordinarily possible if the members of the group are tired out as the result of having done a full day's work.

By holding the foreman conferences in the plant during the working hours, it is a simple matter for the plant superintendent or other higher executive to keep in close touch with the work done. This would appear to be a desirable thing from every standpoint. It does not imply, however, that the superintendent should attend the meetings. Specific comments relative to this point will be found on page 61. Another advantage of the company-time plan is that the company really purchases an interest in the work by

making it possible for the foremen to meet in conference during working hours. This enables the management to exercise some control over the whole plan and to capitalize upon the results secured. It is a fallacy to assume that the full benefits of a program of foreman conference work can be realized in cases where the management leaves the entire matter to the initiative of the employees and the direction of outside parties.

Meetings on the Men's Time.—Some of the disadvantages of holding foreman conferences entirely on the men's time are included in the preceding paragraphs. In certain cases, groups of foremen have indicated their preference for evening meetings in order that they might be free from any immediate responsibility while in attendance.

Plans which involve evening attendance are usually more suitable for plants which are located in small communities rather than in large cities. In "one-industry" towns the men do not, as a rule, have to travel very far between home and work, and it is therefore easier to organize conference work for them in the evening than it would be in a large city.

It often happens that superintendents and managers of industrial plants are reluctant to make arrangements for the operation of foreman conference work during working hours. This may be and often is true in cases where the management is, generally speaking, in favor of the work. In such cases it is better to make the best of an evening program with the disadvantages which are inherent in it than it is to have no foreman conference work at all.

Because of the fact that attendance at evening conferences is voluntary, the leisure-time program helps the management to identify the earnest and progressive foremen who are ambitious to improve their efficiency on the job.

This is of some value in connection with the selection of men for promotion. To offset this apparent advantage, however, some of the best foremen in the employ of the company may be prevented by home duties and other outside responsibilities from attending evening conferences. Moreover, many of the foremen who most need help may not attend at all for a variety of reasons.

The adoption of an evening program necessarily makes the work somewhat discontinuous. Two sessions per week of two hours each is, ordinarily, the practical maximum for such work. Such being the case, any advantages which result from a more intensive program are entirely lost.

Combination Plans.—In many cases plans whereby conference work is carried on partly on company time and partly on the men's time are looked upon with considerable favor. A common arrangement is for the meetings to be called for the latter part of the afternoon, the men being excused from their work about one hour before quitting time and remaining an hour or more after supper. Very often the supper is furnished by the company, so that the men can meet for conference work both before and after eating their evening meal. This plan has certain peculiar advantages. It promotes mutual acquaintance and sociability in the group. As this plan works out in practice, the conference is not interrupted by the serving of the supper. The discussion is, of course, very informal but it is generally confined to matters related to the questions which have been brought up in the session immediately preceding the meal.

Where a combination plan is worked out which calls for attendance after working hours and dinner is not provided, the disadvantages of the plan are at a maximum. Such arrangements cause the men to get home behind their usual schedules, tired out, and hungry. Such a procedure, if

forced by the management, tends to have a bad effect upon the morale of the men.

Homogeneous Groups Desirable.—A sufficient amount of experience has been secured through conducting conferences with foremen in many different sizes and types of industrial plants and under varying conditions, to justify the assertion that conference groups should always be made up of men of approximately equal rank in the organization. This means that a plant superintendent should not be enrolled in a foreman conference group. It also means that assistant foremen should not be enrolled in conferences set up for departmental superintendents.

Reasons for Having Homogeneous Groups.—Full and free discussion of the many aspects of the foreman's job is a fundamental characteristic of the conference procedure. Such discussion is most profitable when actual plant cases and problems are discussed. Regardless of the personality of a superintendent or the degree to which he is well liked by the foremen, the mere fact that he is their official superior tends to inhibit the open and free discussion of plant problems. If a plant superintendent can appreciate the importance of the constructive thinking out of plant problems by his foremen, and fully realize that a qualified conference leader always steers or directs the discussion in such a way as to secure the maximum values, he should be willing to stay out of the meetings and let the leader have a fair chance to make a success of his work. It is almost as undesirable to have leading men, straw-bosses, or assistant foremen as it is to have the superintendent or general manager present in a foremen's group. This does not mean that conference work with assistant foremen is likely to be unprofitable. It simply means that the best results can be secured if separate conference groups for assistant foremen

are organized, thus carrying out the idea of homogeneous groups. As stated before, a great deal of experimentation indicates that it is extremely desirable to segregate groups according to their rank in the organization where they are employed.

Conferences with Superintendent and Staff.—In the preceding paragraphs the idea of having a superintendent participate *directly* in the work of a foreman conference was discouraged. The success of a conference program, however, is absolutely dependent upon the *active interest and support* of the superintendent and his staff. It is improbable that any work done with groups of foremen could function in an important way in a plant if the superintendent were not thoroughly well posted with respect to the aims and purposes of the work and the general character of the results being secured. In other words, the superintendent and his staff should be thoroughly in touch with the situation. This does not mean that a conference leader should make a detailed report to the superintendent covering *everything* that transpires in the foreman conference. To “peddle” information is one of the most effective ways in which a leader can destroy his usefulness. It means that the superintendent should be made aware of the general scope of the work, the objectives which were set up by the leader, and some of the more important results which the leader believes he has secured. Because of the fact that the *ultimate responsibility* for improvement in supervision rests with the management, it is necessary for a superintendent and his staff to be kept informed in this way in order that they may *identify their own responsibilities* relative to supervisory matters and be in a position to cooperate intelligently in the improvement of supervision in their plant.

The best method known to the writer for carrying this

general idea into effect is to hold short conferences with the superintendent and other higher executives and staff officers, in *parallel* with the foreman conferences. As indicated before, the general nature of the objectives of these conferences should be (1) to point out the responsibilities of the superintendent and his staff for the maintenance of efficient supervision, and (2) to discuss constructively what can be done by them in each case. By following such a procedure, the superintendent and his staff participate in the program in a way that involves the greatest values for all parties concerned.

Who Should Conduct These Conferences?—The preceding paragraphs suggest a line of procedure which works out satisfactorily when a man from outside of the organization is secured to serve as conference leader. A considerable number of industrial concerns, however, seem to prefer to retain full control of their conferences by having the work done by an employee of the company. In view of the fact that all sorts of plans have been tried out with some degree of success, it seems to be impossible to make any general statement covering this matter. There are, of course, certain advantages and disadvantages connected with every plan. When the leader is an employee of the company there appears to be some advantage in his being a *staff* officer, not directly in the line of authority over the foremen. This question, however, is really one that should be decided individually for each particular plant or company. The “job specifications” are given with a fair degree of completeness on page 27. With these items or equivalent data at hand, the job of selecting a leader becomes a problem of finding a man to fit the job requirements.

The Follow-up Program.—The chart which is here reproduced was developed by the writer in 1922 in a series of conferences with the shop superintendent and some of the

PLANS FOR FOLLOWING UP A PROGRAM OF FOREMAN CONFERENCE WORK

SUGGESTED PLAN	ADVANTAGES SUCH AS	DISADVANTAGES SUCH AS	SUCCESS FACTORS (SAMPLES)
I. Foremen's Club.	1. In many cases there is already such an organization. 2. Easy to organize if there is none. 3. Promotion of mutual acquaintance. 4. Sociability.	1. Primarily interested in technical questions. 2. Tendency to have set program, papers, etc., rather than discussion. 3. Organization may be too large for conference discussion. 4. No one specifically responsible for maintaining conference program. 5. Probably handled by discontinuous discussion of unrelated topics.	1. Intelligent leadership. 2. Degree to which free discussions of all phases of the foreman's job can be realized. 3. Interest of the foremen in the club.
II. Plant program carried on by a member of the organization.	1. Conference leader has been through the first series and has some knowledge of how a conference should work out. 2. Conference leader from organization will know company policies and organization. 3. Conference leader partly trained as by-product of first series.	1. Man from organization will have inside information and may have difficulty in securing impartial discussion of plant cases. 2. Not necessarily any tie-up with public educational system. 3. Conference leader may run out of ideas if there is no follow-up for him (as conference leader).	1. Degree to which conference leader has the confidence of the foremen. 2. Ability of conference leader to grasp the principles worked out in first series and apply them himself. 3. Ability of conference leader to discuss problems with the foremen on a man-to-man basis.
III. Several plants co-operating and exchanging conference leader.	1. Each plant secures impartial discussion of conference topics. 2. Outside conference leader may bring new ideas and a new viewpoint.	1. Conference leader may not know enough about a given plant (organization policies, etc.) 2. Men may not feel free to discuss plant problems with an outsider.	1. Adaptability of conference leader. 2. Cooperation between plants.

IV. Have the service of an educational engineer made available for a number of plants. Educational Director employed by Chamber of Commerce, Manufacturer's Assn. or similar organization.	3. Favorable set-up for maintaining interest. 1. All plants participating have expert service by a specialist. 2. Plants may develop leaders in their own organizations and extend their educational program as a plant activity. 3. Cost for each plant would be less under this plan for equally expert service. 4. Impartial discussion by outside expert.	3. Gossip might be peddled from one plant to another by an unwise conference leader and cause trouble. 1. Few highly qualified men available. 2. A bungler on this job would do irreparable damage. 3. Possibility of increased suspicion on the part of foremen. 4. Educational program may not be tied up with public program for vocational education.	3. Cooperation between conference leaders. 4. All parties concerned being on the level. 1. A thoroughly qualified educational director. 2. Cooperation on the part of participating plant and central organization. 3. Degree to which educational director is able to secure confidence of all parties concerned.
V. An individual plant to hire its own educational director.	1. Expert service by man tied up with the organization. 2. A well-balanced plant program.	1. High cost of such service. 2. Scarcity of qualified men. 3. Outsider coming into organization may arouse antagonism. 4. Educational program may not be tied up with public school program.	1. Highly qualified educational director. 2. Degree to which educational director secures the confidence of men and management.
VI. Public school to furnish expert service to plant. (This is a real job for coordinator of part-time trade extension work).	1. Close correlation between plant program and public school program. 2. Expert service available without direct expense to the plant. 3. Possibility of discussing all questions in a strictly impartial manner.	1. Possibility of having a poorly qualified man on the job due to low pay. 2. Common attitude of foremen toward teachers.	1. Qualifications of the conference leader. 2. Ability of conference leader to sell his ideas to industry. 3. Cooperation between schools and industry. 4. Attitude of the City Superintendent and Board of Education toward this type of activity.

higher officials of the Axelson Machine Co., Los Angeles, California. These conferences were held in parallel with a series of foreman conferences also conducted by the writer at the same plant. The chart was worked out with the idea of portraying a number of ways in which this company might organize a follow-up program in order to capitalize on the results of the work being done with the foremen.

NOTE: This chart has been published by the California State Department of Education, The American Management Ass'n., and the Chamber of Commerce of the United States in its bulletin entitled "Foremanship."

Continuous Program of Conferences.—There seems to be no valid reason why foreman conference work in a plant should not in itself be a continuous program. Following an initial program covering from thirty to sixty hours of conference work, experience indicates that the sensible procedure is to let the matter rest for a reasonable period of time, at least for one month. After such an intermission, occasional conferences can be held to good advantage, say, once a week, for the analysis and discussion of cases and current plant problems. It is, of course, apparent that the most important factor in such an arrangement is a qualified and resourceful leader. Such a program emphasizes the desirability of having a man in an organization who can serve as a conference leader at such times as may be desirable.

Instructor Training Course.—Another form of follow-up which is worthy of serious consideration is to give all of the foremen the benefit of a thorough course of instructor training, especially adapted to their particular instructional responsibilities. Assistance along this line can generally be secured through State directors or supervisors of trade and industrial education. In the ordinary course of procedure

in an *initial* series of foreman conferences, the subject of the foreman as an instructor on the job receives far less attention than might well be given to it.

Foremen's Clubs.—The idea of foremen's clubs has been looked upon with considerable favor in many sections of the country, especially in Ohio. This seems to be a desirable form of follow-up work. Attention is drawn, however, to some of the possible disadvantages of foremen's clubs as indicated on the chart on page 64.

Occasional Meetings.—Occasional meetings of a plant group perhaps once a month during the winter season, combined with a dinner and followed by an informal conference, seem to produce worth-while results where the plan has been tried out. In this as in all similar situations it is important to have (1) a clearly defined objective, (2) some notion as to how it can be put over, and (3) competent leadership.

CHAPTER VI

RESULTS TO BE EXPECTED

Preliminary.—As was explained in the first few chapters of this book, the conference is a special type of educational organization particularly well suited to the attainment of “putting over” of certain types of educational objectives with a group of experienced people. The purpose of this chapter is to discuss some of the results which may be looked for as a result of conference work.

Two Classes of Results.—The results secured may be considered as being of two principal types as follows:

- a. Those which affect the attitude and performance of the men on their jobs *as individuals*.
- b. Those which affect the attitude and performance of the men on their jobs *as members of an organization*.

INDIVIDUAL RESULTS

Better Appreciation of Responsibilities.—Well conducted conferences of the type discussed in this book tend to give the individual group members *a better appreciation of the responsibilities involved in their jobs*. Better appreciation of the job and its responsibilities may be expected in proportion as the work is made specific. The degree to which each group member is encouraged and assisted in thinking out definite problems directly tied up to his job determines the probable values to be derived from the work. There is a vast difference between discussing problems in

terms of generalities and discussing the same problems in terms of the specific applications. This increased appreciation of the job and its responsibilities may, in time, be expected to result in *improved procedure in handling men* on the job with respect to (a) supervision, (b) management, and (c) instruction; *more intelligent planning of work*, the *better handling of orders*, *improvement in leadership*, *fewer mistakes in practice*, and in general the *more effective meeting of individual responsibilities*.

Building up of Job Pride.—Closely associated with the results which are here mentioned, a very obvious result of a program of foreman conference work is the *building up of job pride*. Other things being equal, a man who believes that he has a man-sized job, worthy of all the brains and ability that he possesses, is always a better man to have around than one who has an apologetic attitude toward his work. It is a fine thing for a man to believe in his job and to take a real interest in his work. Such an attitude toward the work at hand makes it possible for a person to derive a degree of satisfaction from the doing of it which is beyond the comprehension of a man who goes about his work with his head down, merely serving time for so much money per day. This building up of job pride on the part of foremen and supervisors is one of the factors which has a direct bearing upon the morale of the entire working force.

Dangers to Be Avoided.—Conference leaders should always bear in mind the fact that the over-intensification of job pride or self esteem is dangerous. In other words it is poor business to assist a man in acquiring a "swelled head." It is entirely possible, however, to stimulate a man's pride in his work and at the same time help him to develop a proper degree of humility because of his own shortcomings and limitations.

Increased Interest in Education and Training.—Another value which is very often secured is an *increased interest on the part of the men in education and training*, not only for themselves, but for the men under their supervision. In many instances foremen have become enthusiastic boosters for apprenticeship and other forms of trade and industrial education whereas before the first series of foreman conferences was held they had been openly skeptical and more or less hostile to vocational education in all or most of its several aspects.

GROUP RESULTS

Team Work.—*Good team work* in an organization is always a valuable asset. In order to be a good member of a team or of an organization it is necessary for a person to have a larger vision of the work of the organization than is usually secured by working as a foreman or minor executive in a single department or shop for a long period of years.

Nothing tends more to make a man suspicious and unjustly critical of his neighbor than to stay away from him and judge him at long distance. On the other hand, one of the most effective ways of bringing about a feeling of confidence in the other fellow and securing an appreciation of his problems and difficulties is to sit down with him and, with pipes lighted, discuss problems of mutual interest and concern.

Mutual Understanding and Respect.—A foreman conference tends to *promote mutual understanding and respect*. Through the discussion of actual plant problems and difficulties followed up by an evaluation of suggested methods of dealing with them, foremen tend to acquire an appreciation of the points of view of the other group members. Out of this contact should develop a better and bigger apprecia-

tion of the value of cooperation in the interest of the *big* job being done, wider vision of the whole job and a great many specific suggestions concerning ways in which individuals may become better team workers in the organization.

Cooperation.—*True cooperation between foremen* can exist only where the men concerned have a desirable attitude toward their jobs and their responsibilities. The kind of cooperation which a foreman gives because of his interest in the work of the *organization as a whole*—where he does a little more than the responsibilities of his job require, where he goes out of his way to help the other fellow when he doesn't have to; is the kind of cooperation which, if it exists at all in an organization exists because of the attitude of the foremen toward their jobs. This kind of cooperation cannot be secured by executive orders, pressure from higher up or any of the so-called "big stick" methods. Experience has demonstrated that it can be promoted by a well directed program of foreman conferences.

Coordination.—*Improved coordination in functional organizations* is another condition which is promoted through conference work. Many times foremen do not fully appreciate the values involved through having such agencies as the employment department, store department, inspection department or the planning department added to the organization. The fact that the management figures it all out and decides to add these agencies, as the plant grows and develops, does not mean that the foremen appreciate the situation or that they are in a cooperative attitude toward these functional departments. When foremen voice the opinion in conference that the shop is afflicted with "too much insect authority" is a good indication that they are not "sold" on the functional organization. A reproduction of certain blackboard work on page 172 illustrates how the

attitude of a group of foremen was modified relative to the utility of an employment department.

Opinions from Plant Executives.—The following statements are quoted from letters from superintendents or other plant executives. They indicate the nature of the results which followed programs of conference work with foremen in a number of different plants.

“Better cooperation between foremen.”

“Greater appreciation of the foreman’s responsibilities and decreased labor turnover.”

“Better performance of foremen on the job, resulting in a more effective plant organization.”

“Before the conference the foremen had a vague idea of their duties and responsibilities. During the conference the scope and extent of all the responsibilities to the employer, employees, and themselves were brought out to the foremen in such a way that they could not help but absorb it.”

“Broadening the minds of the foremen and making clear to them their functions and responsibilities.”

“A broader knowledge of the underlying principles of the duties of a shop executive and increased ability to think out and analyze their daily problems.”

“In building a better spirit of cooperation between the foremen; in affording the foremen a more intelligent application of the principles of teaching while instructing the men on the job, and in giving the foremen a broader view of their duties and responsibilities to the management.”

“The work was valuable in that it educated the men to the responsibility of each department in our general method of operation. As a result we secured more harmony and cooperation.”

“The conference furnished a good means for the management to appraise the men who attended. Some of the foremen now recognize their place in the organization and realize to a better extent their responsibilities. Most of them improved their ability to reason and analyze.”

“It has given to our foremen a new vision of their jobs, has stimulated interest among the foremen in plant education, and has prepared the way to a definite program in vocational education.”

“Better understanding of the supervisory job, better treatment of the men, better feeling and better efficiency by the men in return. It has also taught the foremen to know their jobs better.”

“Better cooperation, better understanding of the work, better understanding of the men, closer attention to details, different point of view regarding the company.”

“The foremen who have taken the course constantly use the principles brought out and have been better foremen on the job as a result of the knowledge gained. The work broadened their scope of vision, making them desirous of learning more. And, as they expressed it, there is something more in being a foreman than being a skilled mechanic. Qualities of leadership have been developed.”

“It stimulated thought and discussion along lines not covered in every-day practice.”

“Better team work, cooperation between foremen and more ‘pep.’ Foremen who attended these conferences were made to realize more fully the real importance of their position in industry; especially that they have other duties to perform than merely looking after production and that

they should have an interest in their work beyond that of their immediate departments. The importance of team work, cooperation within the department and with other departments and the true value of practicing the 'Golden Rule' in handling workmen, have been learned to an appreciable extent."

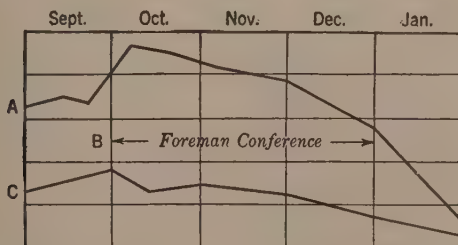
"The clear-sighted method employed in probing inter-departmental difficulties and in solving every-day problems that arise; the manner of showing the advantages of co-operation between department heads; the bringing to light of facts that mean a great deal in the efficient operation of railroad shops, which hitherto had been obscured in the dim light of misunderstandings and petty disputes, all tended to heighten the morale of our shops and left an impression on our foremen that will be far-reaching in its effect and lasting in its duration."

Effect upon Production.—In addition to these results which, as can readily be seen, have to do largely with the foreman's attitude toward the men under him and toward other foremen in the plant, there is considerable evidence that in a large number of cases, foreman conference work has resulted in definite improvement in production. For example, one plant superintendent reported that for the three-month period following a series of foremen's conferences in his plant, all previous production records as to quantity and quality of product were raised, while at the same time there were fewer accidents than for any similar period during the fifteen years preceding. In another plant, through more effective cooperation between the foremen, material reductions were made in the amount of stock in process for a given output, the net result being a reduction of inventory by \$50,000. In still another plant the

superintendent reported that, as a result of the conferences held with his foreman, a saving of \$10,000 on certain processes had been made.

There are many instances where improvement in procedure has been checked statistically with conclusive evidence that better handling of orders, fewer mistakes in routing jobs, decreased labor turnover and fewer accidents have resulted.

The following chart is a crude replica of one which was plotted by a conference leader principally for the purpose of having something definite to place before the superintendent of the plant in order to show him that the foreman conference work was yielding some results which could be measured.



Explanation of Chart.—Curve A shows the labor turnover beginning one month before the foreman conference was held, extending through the period of the conference and continuing for one month following the termination of the conference.

Line B represents the beginning, extent, and time of closing of the foreman conference.

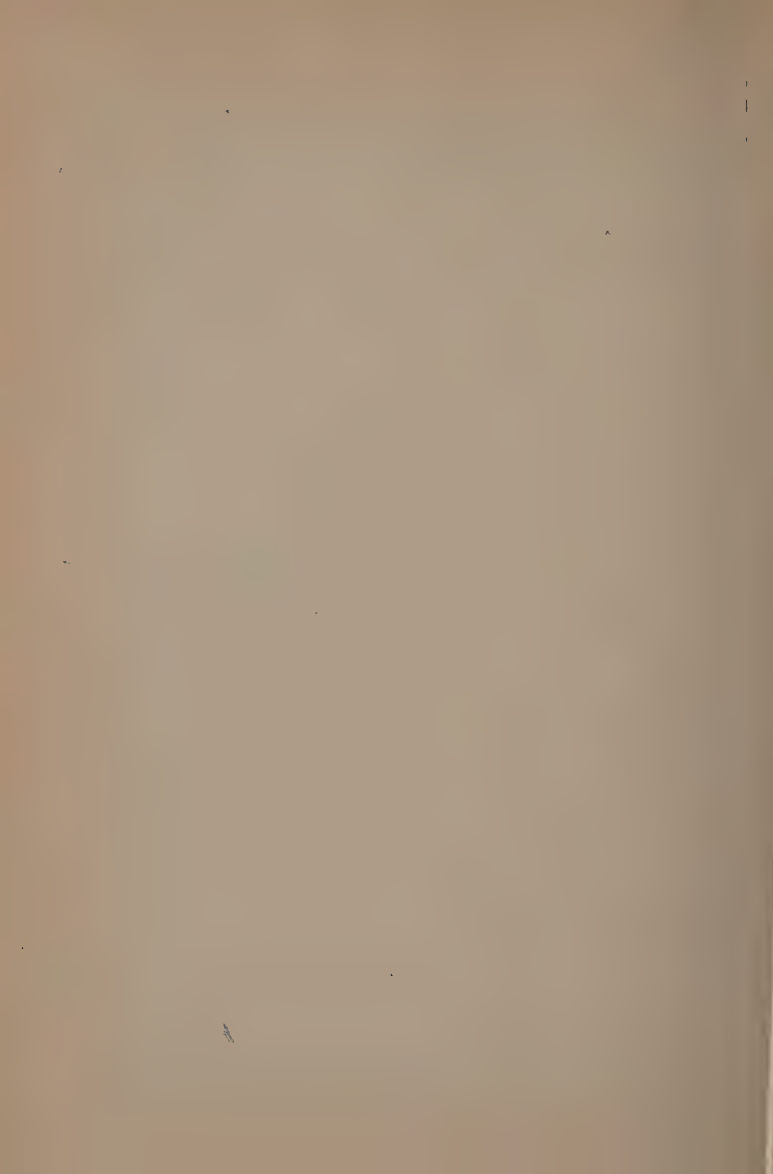
Curve C represents the time lost due to absenteeism, tardiness, etc.

Dangers in Statistical Control.—With regard to statistical control or attempts to evaluate the results of conference work with foremen statistically, it is highly important to appreciate the dangers incident to such activities. While some aspects of the work can be evaluated statistically, it is generally recognized that the more important results which come out of foreman conference work are exceedingly difficult to evaluate in any exact way. Ill-advised attempts to justify foremanship conferences on the basis of what can be shown on statistical reports may do considerable damage. It is far better to keep no records of any sort on the results of a training program than it is to go too far with a set of records on the performance of foremen on the job. If the average foreman knows that someone is standing around with a notebook and pencil or a report form of some sort to check every false move he makes, he will be less likely to do his best on the job than if he were left with considerable freedom to use his head, with a full realization of the fact that the superintendent of the plant has enough confidence in him as a supervisor and manager of his department to let him go ahead with his work without being annoyed either by the necessity of reporting in detail what he does at every turn, or still worse by having some clerk or inspector check all the details of his work.

Summary.—In summing up, attention is called once more to the fact that too much effort to accurately measure and evaluate the results of conference work may serve to defeat the most important objectives of the conference leader and to neutralize such constructive work as he may be able to do. This is true because some of the most important and valuable results are *intangible* and up to the present time methods of measuring them, which will not do more harm than good, have not been discovered.

PART II

APPLICATION OF THE CONFERENCE PROCEDURE TO THE IMPROVE- MENT OF FOREMANSHIP



CHAPTER VII

THE GENERAL PROBLEM OF TRAINING IN INDUSTRY

Preliminary.—From the standpoint of a program of education and training for industrial occupations, all persons who might be considered as candidates for any sort of training may be divided into three principal groups:

1. Those who have neither the knowledge nor the skill necessary to do the work required on the jobs for which they are employed.
2. Those who have a portion of the knowledge or skill necessary to meet the requirements of their jobs.
3. Those who have at least the minimum knowledge and skill necessary to come up to a passable standard of performance in their work.

The first group may include all classes, in both shop and office, of what is commonly known as green help—beginning apprentices, clerks, and other unskilled workers. In general, all new recruits would be included in this group.

The second group would include all persons who have had some specific experience in a given industry or line of work or who have a limited amount of specific knowledge and skill related to a given occupation. Advanced apprentices, the majority of recognized workers in industrial occupations, and, in general, all shop and office employees who have had a certain amount of training and experience would

be included in this second group. The second group would also include persons who have recently been advanced by promotion, either from within the organization, or by transfer from some other organization engaged in a similar line of work.

The third group would, in general, include all persons of long experience on a given job. Regardless of how their training may have been secured, they have somehow or other brought themselves up to a degree of *ability in performance* sufficient to do their work satisfactorily. This group would include all competent, experienced workers, such as journeymen, foremen, bookkeepers, clerks, supervisors, and others employed in industrial occupations who are able to satisfy their employers, through the performance of their duties, that they are occupationally competent, at least up to what is generally accepted as the minimum performance standard.

Three Principal Groups of Objectives.—For the three groups mentioned in the preceding paragraph, a program of education and training may be considered under three main divisions:

1. Training to develop morale.
2. General education.
3. Specific vocational training.

Why Some Programs Fail.—Many plant programs of education and training fail to produce the results which are hoped for, because of either one or the other of two important mistakes: (1) The specific purpose of the program is not clearly defined; or (2) the means for accomplishing the purpose of the program are poorly selected. A great deal of confusion and misdirected effort is bound to result where a program of education and training in industry is

set up on a purely "general" basis. Such a procedure usually results in the confusion of educational objectives and in general inefficiency so far as training is concerned.

There are two principal steps in dealing with such a problem: (1) to determine accurately just *what* there is to be done; and (2) to determine *how* it can be accomplished. Much confusion of thinking results from confusing ways and means of carrying out a purpose with the determination of the purpose itself. To determine first *what* to do and then *how* to do it is a sound principle of procedure, not only in solving problems of training but also in solving other problems.

Morale Objectives.—It is generally recognized that good morale in an organization is of the greatest importance. In proportion as the members of an organization are discouraged, dissatisfied, and disinterested in their work, the cost of doing business is increased. While the importance of good morale has, to some extent, been recognized for a long time, it is only within a comparatively short time that plant executives, managers, and employers generally have given serious consideration and study to specific ways and means of securing it.

Changing industrial conditions have tended to create situations that have made it difficult, if not almost impossible, to see reasons why workers should take much pride either in their work or in the organizations in which they are employed. The subdivision of labor, the breaking up of skilled trades into specialized operations, and the lack of an opportunity to acquire a mastery of a trade, in the old sense, has been largely responsible for this. Human nature is much the same now as it was two thousand years ago. Fundamental human instincts have not changed. The creative or craftsmanship instinct is still just as potent in its effect

upon a man's attitude toward his work as it was in the old days when men were master workmen in the full sense of the term.

Morale, in the sense in which the word is here used, is dependent upon such factors as a man's pride in his work, his attitude towards the craft or occupation, the satisfaction which he can get from doing a good job, his attitude toward the individual employer or the company by which he is employed, his sense of justice and fair play, and his ambition to get somewhere. It is a fallacy to assume that all of these things are controlled by the amount of wages paid. Good morale in an organization cannot be secured by increasing wages where there is no appeal to any of the other factors mentioned. In many instances this morale element has been considered of such importance that it has tended to warp the judgment of those responsible for programs of education and training. They have assumed, without analyzing the problem, that if they could only secure this desirable element the problem of training would largely be solved.

General Education Objectives.—Considerable effort has been misdirected in trying to solve the problems of vocational training, because of the acceptance of the fallacy that general training results in specific ability. The older psychology, based upon the idea of the general development of the faculties, has now been discredited, and it is generally conceded that its findings are not true. For example, an academic course in logic and the principles of logical reasoning does not necessarily enable a person to make logical decisions in specific cases. In the practical activities of life, the study of mathematics, which is supposed to develop the powers of perception and the ability to discover relationships, does not enable a man to qualify as

an expert driver of an automobile where he is constantly called upon to perceive quickly, use good judgment, and make quick decisions. The *abstract* study of English grammar does not train a person to use correct English under all circumstances. The use of grammatically correct language is probably controlled to a greater extent by the language which children hear at home than it is by the formal study of English grammar.

General educational objectives are often set up principally with the idea of developing general abilities and appreciations coupled with the general aim of securing a fund of information and the ability to secure information from books and other recognized sources. Such objectives are all right in their proper place, but a plant superintendent or other person responsible for a program of education and training in a plant, should not try to make himself believe that such general objectives will indicate the best procedure for securing increased efficiency on the job on the part of his employees.

The author has, on numerous occasions, heard plant officials and executives express their supreme confidence in general education and a *knowledge of general principles* as the one thing to be desired for their employees. It is impossible really to *learn* a general principle as such. It is *learned* when the learner has applied it intelligently in practice, and not before. The more nearly the practical application approaches the actual job to which the general principle applies, the more effective the learning will be. The natural way to learn things is to work out specific applications first and then to learn to generalize and recognize the principles afterwards. In learning to drive an automobile in city traffic, a *knowledge of the principles* of operation of gasoline engines functions in a very small way. On the

other hand, persons who have developed skill in driving automobiles may, with profit, learn some of the general principles involved in their operation.

This tendency, on the part of certain persons, to glorify the learning of general and fundamental principles first, together with the assumption that each individual will somehow learn to make his own applications, is, in most cases, the logical result of their own training. In the experience of the writer, college-trained engineers and college-trained industrial executives tend, to a marked degree, to hold such views with respect to fundamentals. Such persons could well avail themselves of the advice of a competent vocational education man relative to their plant educational problems in just the same way as they seek the advice of a competent lawyer to advise them in legal matters.

It is the hope of the writer that nothing in the preceding paragraphs will be interpreted as "just another slam" at general education. Nothing of the sort is intended. The paragraphs were written for the specific purpose of calling attention to the fact that general education, as at present organized, does not and probably cannot solve the problems involved in specific vocational education in the industrial field.

Vocational Training Objectives.—The objectives of vocational education are, necessarily, very specific. Vocational education in the industrial field is concerned with two specific purposes, as follows:

1. To prepare persons for the particular occupations which they propose to follow.
2. To improve the vocational efficiency of those already employed in industry.

The first purpose or objective calls for preparatory or initial training: the second for extension training.

Initial training is that training which may be given to a "new" worker, such as a beginning apprentice or a "green" hand in the shop or factory. This type of training is efficient in any given case in proportion as the instructor is (1) thoroughly competent as a worker in the occupation involved, and (2) able to teach what he knows. There are, of course, many other elements¹ that go to make up the sum total of the characteristics of efficient vocational training. A detailed discussion of all these factors would, however, be beyond the scope of this chapter.

Extension training is that training which may be given to a person who is already partly competent in his field of work. Such training is intended to add to what he already knows about his job. A program of trade extension training for a man should be laid out with regard to (1) the knowledge and skill which he already has, (2) his needs, and (3) the probable utility of the extension training on his job. Trade extension work will be efficient in proportion as these three factors are recognized and intelligently handled. It should be perfectly clear that thoroughly competent instructors are just as essential to the success of extension training as they are to the success of initial preparatory training.

Many workers in every trade or industrial occupation have never had an opportunity to learn thoroughly many phases of their jobs which are often classified as belonging to the technical side of the trade. Specific trade extension training given for the purpose of increasing "job intelligence"² is generally recognized as being very desirable,

¹ Sixteen "efficiency factors" are given in Prosser and Allen's "Vocational Education in a Democracy."

² See page 219.

especially for those whose jobs call for the exercise of judgment.

Specialized Jobs vs. Skilled Trades.—It is generally recognized that the skilled trades, and other occupations in which the learner must spend some time in gaining a reasonable degree of proficiency, require a certain period of training. Also, it is recognized generally that it pays to organize and direct this training according to a systematic program. Evidence of this fact is found in various plans for the equivalent of apprenticeship in practically all skilled trades and other so-called higher-grade occupations, including the professions. For the semi-skilled trades and for work on specialized operations, however, the value of definitely organized training is not always recognized. Not only is the necessity for any form of organized training often ignored, but it is a general opinion among those who direct large numbers of workers in semi-skilled specialized jobs that no particular training is needed for these jobs. This attitude, on the part of those responsible for the development of new workers in such occupations, is due to a failure to recognize the fact that training is going on in *all* places where people learn to do jobs, whether that fact is recognized or not.

At this point the author's principal purpose is to discuss in some detail the entire matter of job training with the purpose of setting forth some principles which may be of value in determining whether or not any form of organized training is economically advantageous in any particular situation. While organized training will always reduce the cost factors involved in training learners; this reduction in cost has to be evaluated against the cost of the facilities necessary to establish a system of organized training. Obviously, it would not be a sensible procedure to advocate organized training for any occupation or specialized job

unless it could clearly be shown that such training was effective in reducing the actual cost of training.

What Is Meant by Training?—Training develops, through a series of progressive experiences, an ability on the part of the learner to do something which he could not do before. These progressive experiences should be extended to the point where the learner can satisfactorily perform the operations of the job for which he is being trained. The training process should also provide for securing such technical knowledge and other information relating to the job or occupation as it may be necessary for the learner to have.

One point worthy of special mention is that every training process or program should be directed toward bringing a learner up to a minimum standard of efficiency in the performance of work. Jobs are few and far between where people are paid for what they know. In practical life almost everyone is paid a salary or wage for *work* performed, and it is only in rare instances that an additional wage or salary is paid for the knowledge and skill which a person may possess over and above that needed to do the particular work which goes with the job held.

In attempting to determine whether or not any training is involved in learning to do a specific job, perhaps the first question should be: Can any person without any instruction or training do the job acceptably the first time he tries to do it? If the answer to this question is negative, it follows that some training is necessary for performing the work. It is true that only a small amount of training may be necessary, but, whatever the job is, if a perfectly green man would not be expected to be able to do it satisfactorily the first time he tried without any instruction or directions, some training is necessary to bring him up to an acceptable standard of performance.

Training Always Going on.—Training is always going on wherever people are learning to do work. This is true whether the fact is recognized or not. To ignore the fact neither eliminates it nor makes the solution of the training problem any easier.

There are two principal methods of learning to do a job:

a. By the "pick-up" method.

b. By following some definitely organized procedure.

It is entirely possible that there are many jobs in almost every organization, industrial and otherwise, for which it would hardly pay to set up any organized training. In other words, the "pick-up" method is not to be condemned altogether, and it should not be inferred that this discussion is an argument for organized training for *all* jobs. After a consideration of the various factors involved in training for any job, it must be decided, for each particular job, whether the most efficient and economical way of training people is by the "pick-up" method or by some more definitely organized method of training. In the following discussion an attempt is made to point out some of the elements that should be taken into consideration in determining these factors for any particular job.

Some of the Cost Elements Involved.—In a preliminary way it may be stated that such factors as the amount of time required to learn to do a job, the probability of accident to self or others, damage to equipment, spoilage, scrap, and second-quality production, interference with regular production, and the turnover during the learning period indicate the various factors that should be identified and considered with regard to each job before deciding whether or not it is worth while to set up any organized training for the job.

As has been stated before, organized training will always

reduce the value of the cost factors involved in training, but, coincident with this reduction of cost, the overhead or operating cost of the training program itself should be evaluated in every case. The fact should be clearly appreciated that organized training is always possible for *any* job, no matter what it is. This does not mean that organized training should *always* be set up. If the characteristics of a job are such that the "pick-up" method is the most economical and satisfactory, the sensible thing to do is to go ahead and use it.

Facts to Be Considered.—The following discussion deals with the characteristics of a job which should be considered before deciding, for any given case, whether or not any organized training is worth while.

Characteristics of Jobs for which Organized Training Will Probably Be Profitable.

1. The job has potential danger points not automatically covered.
2. A considerable number of human operating points.
3. Considerable technical knowledge needed on job under varying conditions.
4. Job procedure not fully standardized.
5. Long time required to acquire standard performance ability under the "pick-up" method.
6. Production is interfered with by having green hands learning by the "pick-up" method.
7. Learners turn out considerable second-quality product and make a lot of scrap.
8. Much damage may be done to tools and equipment.
9. Job carries considerable responsibility.

Cost Factors Involved in Getting a Learner up to a Minimum standard of Performance.

1. Time of person who functions as an instructor.
2. Spoilage and breakage.
3. Turnover of learners.
4. Reduced production from equipment used for training.
5. Difference between value of learner's production and wages paid learner.
6. Accident losses.

The Problem.—Regardless of the ways and means utilized for taking care of job training in any organization, the fundamental problem is to keep these cost factors down to the lowest possible minimum. Some or all of these cost factors can be reduced for certain jobs by using organized methods of training. Conversely, it is entirely possible that for certain jobs these cost factors would be increased by overdoing organized training. It naturally follows, then, that the sensible procedure is to consider the characteristics of each job separately and attempt to arrive at a decision with respect to the effect upon these cost factors of training learners by organized methods, as contrasted with the more informal "pick-up" method.

ORGANIZED TRAINING—DETAILED DISCUSSION

Organized training for any job is justified in proportion as the cost factors involved in training can be minimized. The six cost factors previously listed will now be considered in some detail.

1. THE TIME OF THE PERSON WHO FUNCTIONS AS AN INSTRUCTOR

Wherever a plan of organized training is set up this cost factor is always involved. There are four principal ways by which this cost factor can be reduced, as follows:

- a. Have the foremen do their own instructing.
- b. Use "call" instructors.
- c. Use departmental instructors.
- d. Have a training department.

Having Foremen Do Their Own Instructing.—It would appear to be obvious that to have foremen do their own instructing tends to reduce this first cost factor to a minimum. This plan is suitable where the amount of instructional work is small and also where the demands for the instruction of men are occasional rather than regular.

This plan has an advantage in that the foreman who directs the work of the men also takes care of their instruction. This tends to eliminate friction in a department and definitely fixes the responsibility for the instruction of all of the men working under the supervision of a given foreman. Moreover, this plan does not complicate the organization of the plant by adding additional persons with special responsibilities, and a foreman has no one to blame but himself if the necessary instruction in his department is poor.

Perhaps the principal disadvantage of this plan lies in the possibility that the foreman may not know how to meet his instructional responsibilities. A foreman's major responsibility is, of course, to get out production. To make him responsible for the instruction of all new men in his department places an additional load upon him which tends

more or less to interfere with the discharge of his principal function.

Using "Call" Instructors.—Instead of having the foreman do his own instructing another simple plan is to have certain selected workers in a department available for instructing new employees as the need may arise. Such instructors are sometimes known as "call" instructors. This plan is well suited to a situation where a limited amount of training is to be done.

Using Departmental Instructors.—Where the amount of instructional work justifies the procedure, a slight extension of this plan involves the use of departmental instructors who devote most, if not all, of their time to training new employees. Either of these plans relieves the foreman of all but his production duties. The call instructors or departmental instructors are always rendering service for wages received, as they work on regular production work when their services are not needed for training new men.

A distinct advantage of either of these plans is that when an instructor is working with new employees he has no other responsibility. Obviously, a foreman who tries to take care of this work himself must carry a more or less divided responsibility.

Another advantage of having call, or departmental, instructors is that all of these instructors are continually in close touch with the production work of the department—they "have their hand in" so to speak; whereas a foreman who ordinarily is not called upon to do production jobs is apt to be somewhat rusty when it comes to actual manipulation.

Either of these plans, however, involves certain disadvantages which should be considered. It is often thought

to be a disadvantage to have one man train an employee who is to work under the supervision of another man. To have an instructor in a department sets up a situation where this condition prevails. The instructor trains a man who is subsequently used on production work by the foreman. In case the instructor is not cooperating closely with the foreman there are many opportunities for friction and more or less of a tendency to put the foreman in "second place" in his department in the estimation of new employees. Not only this tendency, but also the possible effect upon the job pride of the foreman should be carefully considered in deciding upon the merits of using departmental instructors either on full time or on part time as under the "call" plan.

Many of these disadvantages can be minimized by making all departmental instructors responsible to the foreman of the department in which they are working. Experience indicates that to have departmental instructors responsible to some one outside of the department tends to intensify the disadvantages of using such a scheme. Another point that should be noted with reference to the utilization of departmental instructors is that it adds to the organization and thus tends to increase the overhead.

A Separate Training Department.—A separate training department is suited principally to situations in which very large numbers of learners are to be trained. Training departments are commonly established separate and apart from production departments. All employees needing instruction are turned over to the training department, the idea being that they will be adequately trained for a job before being assigned to work under a production foreman. This plan adds considerably to the complexity of a plant organization and adds one more functional department.

In other words, it is one of the steps towards a completely functionalized organization. This increased complexity of the organization is unavoidable where a training department is installed. Where large numbers are to be trained, however, the plan has certain outstanding advantages, among which might be mentioned the following:

1. There is less interference with production work.
2. It becomes possible to have an expert educational director to supervise all of the training.
3. The learners are segregated during the learning period.

It is not possible to make any general statement which would indicate the exact point where it would be profitable to install a training department. Such a determination would have to be made for each individual plant after a careful study of the situation. There is no doubt, however, that where the amount of training exceeds a given minimum a separate training department becomes the most economical and efficient device for dealing with the problem. It is probably true that wherever the situation is such as to justify the setting up of a training department it always pays to have a thoroughly competent expert employed to head the department and supervise all of the training in the plant. Many plant superintendents who have to deal with problems of training large numbers of employees believe that it is a distinct advantage to have all learners segregated from regular production workers during most, or all, of the period of learning. There is, however, some difference of opinion on this point.

Perhaps one of the chief disadvantages of a training department lies in the fact that foremen tend almost universally to be antagonistic toward the proposition. From

past experience in industrial organizations it may be stated that one of the most important things to be accomplished in connection with the establishment of a training department is to get the foreman into a sympathetic and co-operative attitude relative to the matter. Foremen's conferences have been conspicuously effective in promoting a spirit of cooperation not only with regard to training departments but with respect to other plant activities. Probably the best suggestion that could be made at this time would be to recommend the inauguration of a program of foremen's conferences before the establishment of a training department in a plant. If a training department has already been organized, and the attitude of the foremen toward it is not all that could be desired, the most promising method of changing this attitude is through a series of foremen's conferences.

Foremen are usually antagonistic because they have not analyzed the problem, nor have they considered the difficulties involved in maintaining a competent working personnel. As these problems are analyzed and considered in detail the foreman can be depended upon to reach as logical and as sensible a conclusion, with the accompanying favorable attitude of mind toward the problem, as any plant executive could desire. Experience with large numbers of foremen has confirmed the opinion held by many that foremen are fundamentally fair and square and are always ready to cooperate where they appreciate the elements of a situation and the cost factors involved, and are made to realize the important contribution which they can make toward the success of any activity in the organization where they are employed.

2. SPOILAGE AND BREAKAGE

Spoilage and breakage has been listed as another cost factor involved in getting a learner up to an established minimum standard of performance. A certain amount of spoilage of stock and breakage of tools and equipment is often looked upon as unavoidable, it being commonly assumed that a certain amount of poor work, broken tools, and damaged equipment is naturally associated with the process of learning to do a job. Experience shows quite conclusively that under suitable conditions and where training is organized according to well-defined principles, the training of learners can be carried on with no more spoilage of material and no greater damage to tools and equipment than generally occurs where the same number of experienced workers are employed. In a few instances, the records of organized training departments in this respect have surpassed any records made in regular production departments. By giving adequate attention to the matter of training learners this cost factor of spoilage and breakage can be minimized. This may be accomplished (1) by having all learners fully instructed with respect to the work to be done, (2) by seeing that all new workers are given only jobs for which they possess the necessary knowledge and skill, and (3) by adequate supervision of all new or inexperienced persons. Having a learner fully instructed in the sense in which this expression is used in trade and industrial education means that the learner has been completely and adequately taught to perform the operations necessary to do a job. No detailed discussion of this subject is included in this chapter.³

According to recognized standards for instruction on the

³ For a complete discussion of efficient instruction, see Allen's "The Instructor, the Man and the Job."

job, the instructor's work is never considered complete until the learner can prove by actual performance that he can do the job and that he knows everything that is necessary in order to do the job intelligently without damage to himself or others, without spoiling his stock, and without breaking and damaging tools and equipment. Most of the spoilage and breakage which occurs during the learning period is undoubtedly chargeable to poor instruction. By poor instruction is meant the kind of teaching on the job which is incomplete. All persons who have had to deal with this problem are familiar with the foreman who tells the green man a small part of what he needs to know in order to do something and then tells the man to go ahead and do it. If work is spoiled or equipment is damaged the foreman's alibi is that he told the man and showed him just exactly what was wanted. To make sure, therefore, that learners are adequately and fully instructed is probably the most effective means of reducing the magnitude of this cost element associated with training green help.

Considerable expense and inconvenience may be expected to follow a procedure which is characterized by giving comparatively green workers jobs for which they are only partly trained. It is not at all uncommon for a new employee to be hired and adequately instructed on the first two or three jobs, following which he is given a job that is altogether too difficult for him. Such a situation indicates that either the foreman or other person who is responsible for the instruction of such people has failed to check up on the adequacy of the training given. It is characteristic of a good foreman never to assign people to jobs unless he is satisfied that they have at least the minimum knowledge and skill necessary to do them.

Supervision of Learners Important.—Adequate supervision of learners and apprentices may also be depended upon to reduce the expense incident to spoilage and breakage during the training period. In proportion as a foreman, supervisor or instructor keeps track of what is going on in his department, losses due to spoilage and breakage of material and equipment will be reduced. The fact that there is someone on the job who is at all times familiar with the status of the work has a steadying effect upon the workers as well as upon the learners, which is somewhat independent of what the foreman may actually do. Where large numbers of people are employed a few of them are always more or less irresponsible. Adequate supervision, therefore, is absolutely essential to secure satisfactory results. As stated before, a reduction in the amount of material spoiled and tools and equipment damaged is always associated with adequate supervision of learners and other workers.

Suggestions as to Dealing with the Problem.—Among the methods which may be considered for securing a reduction in training costs due to spoilage and breakage, there are two principal suggestions that might be made. One is to have all foremen or other minor executives, who are in any way responsible for instructing new men, put through a suitable instructor training course. This will accomplish one of two things. Either it will equip them to take care of the necessary instructing of their men in an acceptable way, or it will discover the fact that they are unfitted to function as instructors. The second suggestion is the same as was previously made for reducing those cost factors previously mentioned. A program of foreman's conferences will tend to make the foremen appreciate the importance of assigning jobs to learners who

have the necessary minimum of knowledge and skill to do them without getting hurt or spoiling something, and of adequately supervising the work of the men under them.

3. TURNOVER DURING LEARNING PERIOD

The turnover of labor during the period of learning is an important cost factor. There is usually a considerable turnover of new help during the first few days of employment. For one reason or another, employees decide that they would rather have some other job. A very common arrangement is to pay new employees a fair wage during the period of learning, this being necessary in most cases in order to furnish some incentive to learners. Industrial plants, therefore, which hire a considerable number of green employees are continually making an investment of money in their training. For a very large number of jobs the output of a new employee has a value which is less than the wages paid, and in proportion as considerable numbers of people remain on the job only a few days the cost of training is increased. While this cost factor can never be entirely eliminated, it can be minimized to some extent by an effective system of selecting candidates, by following good instructional procedure in dealing with them after they are selected, and by practicing good methods of personnel management.

The system of selecting new employees is often in the hands of an employment manager; consequently detailed discussion of how such a system might be employed would be somewhat outside of the scope of this book. It may be stated, however, that even if the employment department has an effective method of selecting candidates, it is entirely possible for foremen in the plant so to handle these

candidates that many of them will become needlessly discouraged with their prospects and dissatisfied with their work. Assuming, therefore, that the employment department is doing a good job so far as it can in selecting candidates intelligently, there is considerable opportunity for a reduction of this cost of turnover by getting foremen to see the importance of dealing with new employees, and especially learners, in a more intelligent manner.

The value and importance of good methods of instruction have already been discussed; consequently it is sufficient to point out in this connection that good instructional procedure is very effective in reducing the cost of turnover among learners. This statement is true regardless of whether the foreman does his own instructing or whether there are departmental instructors. It is also true where there is a training department.

The Foreman a Personnel Manager.—All of the personnel work in an industrial organization is not performed by the personnel manager or superintendent. Every foreman or other minor executive is a personnel man whether he realizes the fact or not. Good personnel management by foremen or instructors undoubtedly has a considerable effect upon the amount of turnover of new employees. In large organizations responsibility for personnel work is generally somewhat functionalized, but it probably can never be completely segregated from the work of the plant executives, whatever may be their station. A foreman, for example, who is otherwise efficient on his job may be exceedingly ineffective in dealing with his men in such a way as to keep them interested in their work and satisfied with their jobs.

Aside from a consideration of this cost factor, which has to do with the work of certain functional departments

such as the employment office and that of personnel manager, there is reason to believe that more can be accomplished with the foremen and other minor executives by a program of foremen's conferences than can be secured by any other known method. Advanced technical information and additional technical knowledge and skill on the operations and processes and general technique of production work cannot be expected to get the minor executive into an attitude of mind where he will be ready to cooperate with the general management of the company and minimize so far as possible this cost factor. A conference, on the other hand, where the purpose is to get the men to see the importance of this matter and to consider ways and means of doing some team work to accomplish a result which would be in the interest of all parties concerned, has almost unlimited possibilities for worth-while results, not only in the fields of supervision and management, but also in the field of instruction and training.

4. REDUCED PRODUCTION FROM EQUIPMENT

Wherever equipment which would otherwise be used in regular production has to be used for training purposes, the output of that equipment is usually reduced. Insofar as it is found necessary to utilize regular production equipment for training, this cost element is unavoidable. In many cases it has been found to be economical and convenient to set aside certain equipment for training purposes in order that regular production may not be interfered with. Where the equipment is very large and expensive, it is not practical to have special units for training purposes; consequently, the cost due to reduced production must be looked upon as unavoidably associated with the training of new men. About the only way of reducing the

magnitude of this cost factor is by having the instruction carried out by the most improved and efficient methods in order that the time of learning may be reduced to a minimum.

Where this matter of job training has not been given special consideration, it is not at all uncommon to find that the length of time which it has been generally assumed as necessary to bring a new man up to standard performance can be reduced from 40 to 60 per cent by using more efficient methods.

In one particular case it had been assumed for years that it required six weeks of time for a green hand to become sufficiently expert on a certain machine to turn out standard production. By better organization of the training content, together with some training for the instructors, a better result was secured in two weeks than had previously been secured in six.

The most important suggestion that might be made with respect to minimizing this cost factor is to have all persons, who are responsible for instructing new workers on specialized equipment which is regularly used in production, adequately trained to insure that they will use the best available methods and devices for instructing their learners as rapidly and as efficiently as possible.

5. DIFFERENCE BETWEEN VALUE OF WORK AND WAGES PAID

The difference between the value of the work performed by a learner and the wages paid has already been cited as one of the cost elements involved in training. To a certain extent some of this cost is unavoidable. About the only practical method of reducing it is to make the instruction of new employees as efficient as possible, thus bringing them up to a minimum standard of performance

in a shorter period of time than would be necessary if less efficient methods were used.

There is little justification for the opinion that all new employees are a liability for a long period of time. If the instruction is well planned and well carried out it is entirely possible to have apprentices in the skilled trades or green workers in semi-skilled occupations do productive work of value during the greater part of the period of learning. Where high cost of training new employees prevails, it may be assumed that poor and inefficient methods of training are being followed. It is a more expensive proposition to have an inexperienced person on a job at 25 cents an hour learning by absorption than it is to have a worker under instruction doing productive work, of not too difficult a character, almost from the beginning of the period of employment, at 50 cents an hour.

It often occurs that the only practicable method in breaking in new workers on certain types of massive equipment is to let them help experienced people and learn, if they are able to, by absorption. In many cases these learners, who are farmed out to expert workers, are known as improvers.

About the only way to get rid of the high cost of training new employees, where the "pick-up" method is used for jobs which have a considerable training content, is to try to induce people to learn at their own expense. This means that they will not be paid any wages until they have learned to do the job and are able to come in as regular workers. In the past, when labor has been exceedingly plentiful, this method has been followed in certain localities.

6. ACCIDENT COSTS

It is generally recognized that accidents in shops or industrial plants are exceedingly expensive. All the details of the cost of accidents are difficult to identify. If a man is killed on a machine the effect upon the working force lasts sometimes for a period of years. Ordinarily, a serious accident may be expected to slow down production for several days or weeks, quite independently of the cause of the accident or who was responsible for it. This same principle applies in a lesser degree to all types of accidents independently of the suffering and misfortune of the persons who are injured. The depressing effect is carried over to other workers in the department, and while it may seem to be a bit cold-blooded to point out the cost in money of an industrial accident, it is a well-recognized fact that there are intangible costs which often greatly exceed the direct costs. This matter is so important that many large industrial organizations have safety engineers who give their entire time and attention to minimizing dangers and the possibility of accidents.

An analysis of a large number of accidents shows quite conclusively that many of those which are ordinarily believed to be due to carelessness are actually due to ignorance. One of the best safety devices that can be installed in any industrial plant is a system of instruction whereby new employees are not only trained to perform the necessary steps in a job but are also trained to perform these according to the best practice with regard to safety precautions.

In routine work, as well as in almost every type of activity, human beings are influenced largely by habits. When a man learns to do a job of any kind he begins to

establish habits. Under a competent instructor he will establish correct habits not only with regard to manipulation but with regard to safe practices. This is one of the most effective ways of guarding against accidents. It is immeasurably more effective than to let people establish wrong or dangerous habits while learning by the "pick-up" or absorption method and then attempt to deal with the situation by placarding the plant with posters, mottoes, and pictures which suggest what not to do.

The most fundamental method of reducing cost factors involved in plant accidents is to have all of those persons, foremen or instructors, who have to deal with new employees and teach them to do their jobs, not only thoroughly trained as instructors but also thoroughly equipped to give the necessary instruction in safety first that goes with every job, and fully acquainted with the importance of establishing correct habits on the job as a part of the learning process.

CHAPTER VIII

THE TRAINING OF MINOR EXECUTIVES

Preliminary.—The term “minor executive” as used here means a person who is directly responsible for getting a job done. In other words, a minor executive is a person who, in a sense, is the lowest link in the chain of authority in an organization. He is immediately responsible for having work performed by mechanics, laborers, clerks, or other workers, and is also responsible for having the work of these persons done in a manner satisfactory to the higher executives.

The Purpose of Training.—A training program may be set up for either of two purposes:

- a.* For the purpose of fitting workers to fill more advanced positions.
- b.* For the purpose of making persons more efficient on the jobs which they already have.

The first type of training is promotional in character and has to do largely with giving individuals certain knowledge, skill, and information which they do not need on their present jobs, but which they may need on some higher jobs.

A training program designed to improve the performance of employees on the jobs which they already hold is based upon a very different assumption, the assumption that only in very rare cases are minor executives as efficient on their jobs as they might be. This is largely due

to the fact that most minor executives, including foremen, have had no specific training which tends to fit them for discharging the responsibilities of their jobs as minor executives.

An analysis of the responsibilities of a minor executive shows clearly that there are responsibilities, in fact whole groups of responsibilities, which belong to such a job and for which most persons filling such positions have had no preparatory training. In most cases, they have had to learn from their mistakes. In other words, they have had to learn to perform certain parts of their jobs by the method of trial and error, without much, if any, assistance.

Promotional training is frequently referred to as "vertical" training, while job improvement training is often referred to as "horizontal" training. These terms, "vertical" and "horizontal," have to do with the place of a minor executive in the organization. It should not be inferred that horizontal training has no aims and purposes which tend to qualify a man for advancement. On the other hand, there is considerable evidence to support the assertion that a well-planned and well-conducted course of training, the purpose of which is to make men more efficient on the jobs which they have is one of the most effective kinds of training that can be given to prepare them for advancement in the organization. There are many reasons for this, the most important of which perhaps is that so-called horizontal training courses naturally lend themselves to the utilization of the best training devices. In other words, where the course has to do with the present job of an individual it is easier to do effective teaching than is the case where the content of the course has to do with the requirements of a job which may be beyond the reach of the individual taking the course.

Again, courses intended for promotional purposes, or vertical courses, tend to be more informational in character and the person who takes such a course is usually benefited to the degree to which he secures information about the requirements of some job that he may have an opportunity to fill at some time in the future. A course with horizontal training objectives is intimately tied up with the present work of each minor executive and permits of a direct application on the job of the instruction or training given.

The Characteristics of the Job.—A minor executive is responsible for getting jobs done. He is the person to whom the worker is immediately responsible. To the working force he represents the management of the company. He is not responsible for doing production or service jobs himself, but, as stated before, he is responsible for having the working force do them under his supervision and direction. There is no one lower in authority to whom he can pass on this responsibility. He is held responsible by the management for getting things done, and to a considerable extent he is left to work out his own ways and means for so doing.

It is generally characteristic of the minor executive's job that he has authority in his department commensurate with his responsibilities. In an organization that has not been functionalized, the foreman has a many-sided job. He is responsible for getting out a product according to specifications in the shortest possible time and at the lowest possible cost; he may also be responsible for hiring men, laying off men from his department, planning his work, ordering his equipment and supplies, and looking after the interests of his men. In such an "old-fashioned" organization, where there are no functional minor executives, the fore-

man has a maximum of responsibility; hence, it naturally follows that he has a maximum of authority within his department. Just as soon as an organization of this type is functionalized by adding agencies such as an employment department, purchasing department, planning department, and shipping department, the foreman is gradually relieved of a part of his responsibilities. Naturally, his authority over the work which he supervises is more circumscribed and this is increasingly true as more and more headway is made toward a highly functionalized organization.

Where this type of plant organization is carried to an extreme the foreman has very limited authority, since other agencies decide most of his questions for him. He is usually left, however, with the responsibility of getting out production in maximum amount at minimum cost, and, regardless of how highly functionalized the organization may be, he is usually left with the responsibility of maintaining morale in his department.

Without special regard to the particular type of organization, it may be stated that each minor executive, either in shop or office, is always responsible to some one higher up for knowing, in considerable detail, the status of the work going on in his department. As a supervisor of his department, therefore, he is responsible at all times for knowing what is going on. In practically all cases a minor executive is also responsible to some degree for keeping down the costs of his department. In highly functionalized organizations attempts have been made to concentrate this control of costs, or the managerial function, in a special department.

While it is unquestionably true that costs can be controlled to a considerable extent by an efficient planning department and an effective system of cost control with the

necessary machinery, it is a fallacy to assume that the entire question can be satisfactorily handled by such agencies or systems. A critical examination of industrial organizations has indicated quite conclusively that even in the most highly organized plants the minor executives function in a most important way in controlling costs within their departments. No system of cost control is complete that leaves out the contribution of the minor executives, who are directly responsible for having the work done.

What Constitutes a Good Minor Executive?—In order to function at all as a minor executive, a person needs, first of all, to have a working command of all operations and processes involved in the work done under his supervision. This requirement is not ordinarily questioned. It is rather assumed that every minor executive knows his job and is sufficiently familiar with the detailed operations and processes carried on to enable him to supervise the work of his men in an acceptable way. This knowledge involves considerably more than the mere possession of information about these operations and processes. The minor executive does not need to be the most expert worker, but he does need what may be called a *working command* of all operations and processes. Lacking this, he is unable to command the respect of the workers in his department, and it is inconceivable that he could ever remain very long on the job. Not only is this working command of the operations and processes carried on in his department necessary to enable him to supervise efficiently the work of others, it is absolutely indispensable for the minor executive who has to train new employees. It is a fallacy to assume that a person can teach another how to do a job if he is unable to do that job himself.

Another qualification needed by a minor executive is the

ability to plan his work. The degree to which he may be responsible for planning depends somewhat upon the type of organization. In a highly functionalized organization it is assumed that most of the important planning will be done by a planning department or some equivalent agency. Even in the most highly functionalized organizations, however, every minor executive has to do a certain amount of planning. The planning, in so far as it affects the coordination of departments, may be fairly well taken care of by a planning department, and certain phases of the planning work within a department may be taken care of by the same agency. After all of this is done, however, the minor executive is still left to handle many details within his department which call for a certain amount of planning ability.

It has been previously mentioned that a minor executive is responsible for supervising the work of others. Every minor executive must be to some extent an efficient supervisor. Supervision, in the sense in which it is used in this discussion, means securing information as to what is going on. Without regard to the different ways in which information can be secured, the minor executive is functioning as a supervisor whenever he is securing necessary information relative to the work of his department.

Under this restricted interpretation of the supervisory function, the foreman or other minor executive is on the job as a supervisor whenever he is observing the status of the work, receiving written or verbal reports from workers, or is in any other way learning how the various jobs are being performed. No minor executive can justly be criticized by a higher executive, or accused of having fallen down as a supervisor, if he is thoroughly posted with respect to everything that transpires in his department. If he does not know what is going on, he fails as a supervisor. Hav-

ing full information and not taking the proper action indicates that he has failed as a manager.

In view of the fact that every minor executive is responsible for the work of others, he has to have a certain amount of ability in handling men. A foreman, for example, might meet all of the qualifications previously enumerated and still fail as a foreman because of his inability to get along peaceably with the men working under his supervision. In proportion as men are dissatisfied with the treatment they get from a foreman they fail to do their best work. Costs are therefore increased. A person with a "sore head" in any organization is an expensive luxury. In proportion as a minor executive can handle men so as to make them feel that they want to put forth their best efforts on the job and are conscious that they are going to get a "square deal" from their foreman, a department will run efficiently.

As has been previously stated, training is always going on in industrial or other organizations where people work. Green, inexperienced workers have to be broken in. Apprentices have to be trained and workers of considerable experience in one line of work have to be assisted more or less in acquiring the necessary knowledge and skill to do advanced types of work. A foreman or other minor executive, therefore, should have the ability to instruct men, and any minor executive will be increasingly efficient on the job in proportion as he has this ability. Instruction on the job may be needed at almost any time with almost any employee, and good methods of instruction may be used under the most informal plant conditions. The development of this ability to instruct effectively usually calls for definite training, as it is something that is not ordinarily acquired by the "pick-up" method.

In addition to all of the preceding qualifications which

are needed by a capable minor executive, there is another qualification without which a person could hardly be successful in such a position. This qualification is somewhat difficult to describe, but the nature of it may be indicated by referring to it as the ability to fit into an organization. This implies that a person is able to work with others in a cooperative way. It means that a person not only has the ability to take care of his own job, but in addition has the ability to do this without interfering with other people and becoming a disturbing factor in the organization. It means that he is just as ready to receive and carry out orders from his superiors as he is to give orders to those working under his supervision and see that they are carried out. A minor executive in a large organization employing large numbers of people can not be too much of an individualist. He must be just as ready to respect the rights and privileges of others as he is to expect others to observe his rights and privileges. In short, this ability to fit into an organization calls for a desire to cooperate in the fullest sense of the word. A successful team is not made up of individual star players, each of whom plays the game without regard to the other members. Such a team can in most cases be beaten by a team where there are no star players, but where all of the members work as a unit, each man playing his part without regard to his individual prominence in the organization.

Scope of the Training Program for Minor Executives.—This discussion refers to the scope of the training program which is characterized by horizontal objectives. Referring to the preceding paragraphs in which an attempt was made to describe in a general way the equipment needed by any minor executive, it follows that a training program should be set up for the purpose of qualifying persons to meet

these job requirements. It would appear, therefore, that the general scope of the training might include all six of the principal objectives previously indicated on pages 110-13.

The job requirements first mentioned, i.e., a working command of the operations and processes involved in the work done, are usually fulfilled regardless of whether there has been any definite training program in the plant or not. Attention is called to the fact, however, that the minor executive usually acquires this working command of operations and processes before being promoted to a minor executive's position. For the most part this knowledge and skill was acquired while the individual was a member of the working force. It is also true, to a considerable extent, that a man's ability to fit into an organization and work cooperatively with others was determined in some crude manner before the man was advanced to a minor executive's position. Such qualifications, however, as ability to plan and supervise efficiently, skill in handling men and instructing green workers are mostly left to chance. Any minor executive who has such abilities has probably acquired them by the "pick-up" method. In other words, most minor executives have learned from their own mistakes and from the mistakes of others how to get along on the job. This usually means keeping the superintendent or other higher executive satisfied. While, as stated before, any program of plant training might include all six of the general types of ability previously discussed, in most organizations everything not included under the first item should be carefully considered in determining the scope of a training program. This statement is not intended to mean that no attempts should be made to add to the minor executive's technical knowledge of operations and processes. Such programs are often of great value and there is no question but that work in this

field is often justified. Advanced practical or technical instruction, together with such auxiliary information as is new to him, makes a man more intelligent and competent as a minor executive. It may fairly be assumed, however, that in a great majority of cases the principal need for training lies in other directions.

Determination of the Scope of the Training Program for Any Given Organization.—The determination of the scope of a program for any given organization depends principally upon two factors: (1) upon the type of organization; and, (2) upon the experience of the individuals to be reached. It has been pointed out elsewhere in this chapter that the responsibilities and authority of the minor executive vary with different types of organizations. As the scope of the responsibility is diminished, the authority likewise diminishes, and in a highly functionalized organization, certain responsibilities of a minor executive are very much less than would be the case in an organization which might be called the "old-fashioned" type. The authority of the minor executive likewise would be circumscribed within narrower limits. The type of organization, therefore, would have a very important bearing upon the nature of the training program for any given group of minor executives. Obviously, it would be foolish to give a group of minor executives any training which they would have no opportunity to apply on the job. The scope and nature of a man's responsibilities constitute the base upon which any program of training should be laid out.

The scope of the training and the selection of training agencies should be determined in all cases with regard to the experience of the individuals to be reached by the program. For example, the type of training to be given to a group of young foremen of very limited experience as minor execu-

tives would be considerably different from the type of training which could be profitably given to a group of foremen and other minor executives who have had many years of experience.

A still greater contrast could be drawn between the type of training best suited to meet the needs of prospective minor executives and the type of training suited to the needs of persons of long experience as minor executives.

There is considerable evidence that many programs of education and training for foremen and other minor executives employed in industrial and business organizations have failed to produce all of the results which were hoped for because of a failure to appreciate the importance of these factors. In too many cases it has been assumed that well-organized courses of instruction could be depended upon to produce the result. This attitude toward the problem ignores fully or completely the individual characteristics of the different persons to be reached by the program.

In proportion as the scope of a training program is determined with regard to the type of organization in which the individuals are employed and the extent and character of the experience which has been secured by the personnel of the group, the training program is likely to be of value. To ignore completely these two factors is more than likely to result in a formalized procedure where the persons involved are merely going through certain motions without regard either to the reasons therefor or to the aims and purposes of the activity.

Probable Interest of Higher Executives.—The average plant superintendent or other higher executive in an organization is very likely to assume that all of his foremen and other minor executives have a sufficient working command of the operations and processes carried on in their

departments. It is characteristic of such higher executives that they take considerable pride in the fact that their foremen and other minor executives are competent and efficient men. This attitude of mind on the part of a superintendent indicates that his minor executives are "holding down their jobs" at least sufficiently well to keep the superintendent's troubles down to a minimum so far as petty annoyances regarding details are concerned. Moreover, the average plant superintendent is not particularly interested in the ways and means utilized by foremen in getting desired results so long as everything appears to him to be running smoothly in the organization. This typical situation furnishes considerable evidence that the average minor executive has a working command of the operations and processes carried on in his department and that he is able to discharge his other responsibilities in a passable way.

The average plant superintendent, therefore, is likely to be less interested in the type of training designed to give his foremen additional ability in the field in which he himself believes they are competent than in any other type of training program. Probably the majority of questions that come up to a plant superintendent for decision involve the handling of men or the coordination of effort between different members of the organization. The average plant superintendent is likely to be reminded at rather frequent intervals that his minor executives are not as expert in handling men as they might be, and also he is more likely than any one else in the organization to be able to evaluate the degree to which the different members of the organization are able to fit into the organization as a whole and do team work. It would, therefore, appear that the average superintendent is likely to be most interested in a training program which emphasizes the objectives which have to do with handling

men on the job, instructing and training green workers, and cooperating with others.

It is logical for the superintendent of a plant which is operating smoothly to assume that his minor executives not only know their jobs from a technical standpoint but that they are able to plan their work and supervise their men in a manner that is satisfactory to him. He is, therefore, less likely to be interested in attempting to improve the situation as affected by these elements than in securing cooperation between members of the organization and improvement in handling and training men.

Many training courses which have been developed for the purpose of securing improved performance on the part of the foremen and other minor executives have been quite arbitrarily set up for the purpose of increasing technical knowledge and skill. To a certain extent, many of these courses seem to be organized for the purpose of increasing the individual's ability to plan and supervise his work. In many cases, however, these courses are informational in character and have to do less with the immediate job of the individual than with the job of a plant superintendent or a technical engineer. For example, a course of instruction in industrial organization always includes a great deal of information on such subjects as patriarchal organizations, line and staff organizations, and functional organizations. While such information may be of *interest* to a minor executive, it is believed to be of less value to him on his job than an accurate determination of his place in the organization where he is employed.

It is important for a person to know his place in the organization where he is employed, who his official superiors are, and the nature of his responsibilities to them in different situations. This sort of information is not always in

possession of minor executives and it is something that is needed on the job every day. An organization chart for each individual minor executive showing his relationships to other members of the organization and to the working force furnishes a much more practical and valuable basis for instruction in industrial organization than an informational course which deals with this topic in a general way. There is very little value attached to a course of instruction in industrial organization if, at the end of the course, the foreman is still in doubt as to who his boss is and is still wondering about "insect authority" in the plant.

The conference as a training procedure has been described in some detail in another section of this book. One characteristic of the conference is that under conference conditions no attempt is made to "put over" any instruction. It follows, therefore, that a conference of minor executives must deal with the present jobs of the members of the group and that the discussion must be based very largely upon conditions as they prevail in the organization. The so-called conference method of improving the work of minor executives has yielded results principally in the field of what might be termed human relations in the plant. While the foremen are not instructed, they do have their thinking organized as a result of the conference work and are therefore better equipped to deal effectively with their problems. Foremanship conferences tend to increase the minor executive's ability in handling new or experienced workers, to make a man see the value of being an efficient unit of an organization, to supervise his department in a more effective way, and to do such planning as he is expected to do with regard to the actual job requirements.

Why Many Courses Have Failed to Produce the Expected Results.—Many courses which have been based

upon the assumption that most minor executives need more technical information and training have failed, for a variety of reasons, to produce the results hoped for. Among these reasons might be mentioned the following:

The courses have been largely informational rather than developmental in character. Much of the material of instruction has not been effectively organized for use with groups of minor executives. Job ability has been discounted and in many cases job pride has been offended. Furthermore, most of the instruction which characterizes such informational courses is directed toward equipping a man for promotion to a higher position rather than toward making him more efficient on his present job.

It has already been pointed out that practically all training courses may be classified in either one of two groups, i.e., informational courses or developmental courses. There is a wide gulf between *possession of information* with regard to how a job can be done and the *ability to do* that job. A tendency to make courses informational naturally results from the school training of those who are often responsible for setting up such courses. While the present tendency is to get away as rapidly as possible from instruction which consists of little more than imparting information, it can fairly be stated that only a few years ago most school work was informational in character. The ability to memorize facts, dates, and formulas has, from the beginning, been the chief thing which determines whether or not a pupil will pass his examinations in school. The ability to think clearly and logically has, in regular school work, been subordinated to the ability to memorize information. The natural result of this procedure is exactly what might be expected. Those responsible for education and training in industry, who have not thought their problems through in the light of

modern psychology, tend naturally to set up training courses which are informational.

Another reason why many courses have failed is that the material has not been organized and presented to the minor executives in the most effective way. It should be remembered that the average foreman, for example, has secured the greater part of such education as he possesses in industry itself. He is what might be termed "concrete minded." In considering any problem he always starts with the details of the job or a specific case and is principally interested in correcting an immediate difficulty or meeting the exigencies of a definite situation. He is not accustomed to thinking in terms of generalities, and it is difficult, if not impossible, for him to start with a general principle and make his own application of that principle to a particular case. The demands of the job of any foreman or other minor executive are such that this kind of thinking is necessary, and it is not to be expected that any program of education and training will be notably successful where the purpose is to reform the habits of thought of these practical men. The better procedure is to utilize their established habits of thought for the purpose of carrying out the program of education and training and to capitalize upon such equipment as the men already have.

It is perfectly natural for the average person who is responsible for a plant training program to proceed to set up and conduct his courses upon the assumption that everybody should have the same habits of thought as he himself has developed as a result of his college or technical school training. Most training of minor executives has naturally been conducted on more or less of an experimental basis. All sorts of schemes have been tried. As might have been expected, some attempts have been more successful than

others; some have been highly successful; and some have been dismal failures. Sufficient experience has been secured, however, at the present time to shed considerable light on the causes of failure. These failures in general can be traced to any or all of three causes: first, a failure to recognize the principles of good personnel management; second, a more or less complete confusion of thought as to the purpose of the work as between training for promotion to better jobs and training for more efficiency on the job; third, the development of the work on a basis of faulty psychology or no psychology at all.

There is very little evidence to show that an understanding of general principles affects a worker's efficiency on the job or in any definite way modifies his procedure on the job. The kind of knowledge needed for the satisfactory performance of work is always specific and very concrete. It is true that a study of the general underlying principles of chemistry may affect the degree of interest which a foreman in a paper mill may take in his work, but there is little indication that the study of general chemistry enables such a foreman to perform his duties any better. What this foreman needs is a practical working command of the necessary operations and processes carried on in his department, together with the necessary information that is of direct value on the job in dealing with such situations as may arise.

Many training courses have failed because of the acceptance of the fallacy that a course of instruction in general principles would result in better performance of work. Another fallacy which has contributed to the failure of many programs of plant training is based upon the assumption that foremen and other minor executives will make their own specific application of general principles to their work.

Such a procedure calls for the type of thinking which results from college or university training.

The average minor executive, as has been stated before, is accustomed to handle emergency situations of a very concrete character, and all of his experience tends to make him think in concrete terms rather than in abstract principles. General principles, if they are to be considered at all in the average training course for men who have acquired such education as they have largely in the school of experience, should be arrived at by utilizing the specific information and concrete experiences which the men have had. It has been fairly well demonstrated that the first procedure is unprofitable in dealing with the groups of men who are likely to be involved in a program of plant training.

There are certain personnel factors that should be recognized with regard to any training course for foremen. To illustrate, it is largely a waste of time and effort to attempt to force employees into training courses where there is no tangible evidence that they need instruction.

The average foreman has considerable job pride. He is conscious of his ability to get results. If this job pride is discounted, as it will be if a man is told that he doesn't know enough to be a good foreman, an unfortunate situation is created. A procedure which has been all too common consists of operating a ready-made general training course, largely of an informational character, and then notifying all of the foremen and minor executives that they are expected to attend. Such a procedure is based upon the assumption that if a course is a good thing it cannot do any harm for everyone to take it and it may do some good. Courses of this type deal largely with the technical information which is needed more by higher executives than it is by a minor executive. An examination of a number of such

courses indicates that to a considerable degree they have aimed the training mainly for promotion to a better job, this procedure having been defended on the grounds that it is a good thing to arouse a man's ambition to get on in the world. A considerable amount of experience with such courses indicates that it is not always a good thing either for the man himself or for an employer to arouse his ambition for advancement unless there is a real opportunity for him ahead. In general it may be stated that promotional courses are of maximum value when they are given to a carefully selected group who are in line for promotion and only then when there is a real opportunity ahead for promotion.

Why Certain Courses Have Yielded Tangible Results.—

As has been previously noted certain attempts to organize and conduct foremanship courses have been notably successful, but while it can fairly be stated that very valuable results of a tangible character have consistently been secured through the use of the conference plan, all sorts of courses have, under certain conditions, yielded tangible and valuable results. Whether or not any course will prove to be of value with any given group of foremen depends of course upon the degree to which the course meets an actual need which exists in the organization where it is conducted. The adaptation of any course or any plan to the particular needs of the situation is just as important in a series of conferences as it would be with any kind of a technical or informational course. In all probability some of the reasons why courses conducted under the conference plan have yielded tangible results are as follows:

As a rule there has been no obvious attempt to instruct the foremen. This means that the foremen have not been handled according to regular school procedure nor has a

situation been set up where they have been conscious of the fact that they were under instruction. In other words, the pride which the foremen take in their ability to handle the work and discharge their responsibilities has been recognized and capitalized upon. There is considerable evidence to support the opinion that it always pays to utilize, to the greatest possible extent, any job pride that people may have, rather than to discount it by assuming that they are more or less "ignorant."

Instead of attempting to put over a lot of new information, the foreman's job as it is has been the starting point of these courses. This would seem to be considered more logical than ignoring the complex problems which daily confront foremen on their jobs and devoting time, either to an academic consideration of technical subjects somewhat remote from the men's jobs, or problems of business organization, administration, and management which are involved more with the job of a plant superintendent than they are with the job of the average foreman.

It has also been recognized that there is no standard procedure for personnel work and attempts are not made when conducting foremanship courses under the conference plan to supply foremen with a series of formulas for solving their problems as they arise on the job. Rather has the objective been to develop capacity of the foremen to use their heads on the job with each individual with whom they have to deal. This is based upon the theory that there is no satisfactory substitute for a man on the job who can use his head according to the conditions that may prevail at any particular time.

Furthermore, there is no standard procedure for instruction and any person who teaches is a better teacher in proportion as he is resourceful and able to utilize any method

that will secure the desired result, provided the method is suited to the needs of particular situations. That foremen have considerable responsibility for the instruction of men is quite generally recognized. Experience indicates that the foremen themselves, however, do not always realize that they are actually functioning as instructors on the job. This is natural because they have never heard very much about the details of what constitutes instruction and are apt to associate the idea of instruction with their own school experiences. Experience has thoroughly demonstrated that instructor training is one of the most profitable types of work which can be handled in connection with any foremanship course and it is entirely possible to handle it not only in a way that will not be offensive to the man's self-esteem and consciousness of ability on the job but also in a way that will secure his active interest and desire for more training along this line.

To sum up the characteristics of courses which have been notably successful in yielding tangible results of a permanent character, it may be stated that these courses are usually characterized by developmental objectives rather than the imparting of additional information. It has been stated before that there is no evidence to show that an informational course on business administration and industrial organization will in any way insure the better performance of a foreman on the job.

To use another illustration, there is no evidence whatever to show that an advanced course in Shakespeare will cause a teacher of algebra and geometry in a high school to do a better job as a teacher of algebra or geometry. The theory that any kind of a course in any advanced subject which is new to a person will enable that person to do better work on a particular job involves a fallacy the acceptance of

which results in a tremendous amount of wasted effort and fruitless expenditure of time and money.

Assuming therefore that the purpose of a foremanship course is to secure a better performance of work on the part of the foreman or other minor executive, a logical thing to do is to set up a course which deals specifically and analytically with the various elements of the man's own particular job. In proportion as the work is thus made specific, valuable results can be looked for. In proportion as the work has no particular relation to the responsibilities and work of the individuals concerned, the activity may be expected to show little in the way of tangible results. Nothing in the foregoing should be understood to imply that there is no value attached to miscellaneous knowledge which can be secured either by private study or by attendance upon some sort of a class in an industrial plant, school, or college. There are values involved in such work. The purpose of this discussion, however, is to point out that *if specific improvement on the job is the objective, results will be secured in proportion as the course is set up and organized to deal with the actual jobs of the persons in the group or class.*

Results of Recognition of the Above Factors.—Because of a recognition of the above factors the conference as a teaching device has been used to an increasing degree in foremanship courses. The characteristics of a conference have already been discussed in considerable detail. It will be recalled that the conference was referred to as a teaching device, useful principally for organizing that knowledge which is already possessed by the members of the class. First-hand contact with a conference of industrial executives always serves to satisfy any person not familiar with the procedure that the conference is in no way similar to a

class organization for teaching. The freedom of discussion, the absence of any attempt to teach the men something which they do not already know, and the work of the leader are all so different from what is ordinarily associated with classroom procedure that anyone can see the difference. The conference is a device which is extremely well suited to work with adults of considerable experience. It is not so well suited to young persons of limited experience and is not at all suited to an instructional job where *new* knowledge, skill, or information is to be put over to a group of learners.

The increasing use of the conference as a device for dealing with experienced foremen is due to the fact that it is conspicuously effective for this particular kind of a teaching job. The technique of conducting a conference has been developed entirely through experience and the best and latest information concerning the job is given in the several chapters of this book.

As in the case of a foreman or minor executive in a plant, the statement is also true of any instructor or a conference leader inside or outside of an industrial plant; i.e., *there is no satisfactory substitute for an intelligent man on the job who can use his head according to the conditions that prevail.*

The Objectives Involved in Training Minor Executives.

—All of the objectives which should be considered in setting up any program of training for minor executives may be grouped under two main classification headings, as follows:

- a. Those intended to secure an intelligent following of standard procedure.
- b. Those intended to secure an intelligent discharge of responsibilities not covered by standard procedure.

It is not always easy to determine in detail just what constitutes standard procedure. This statement is true in all

organizations and is a fact that is often lost sight of to some extent by the higher executives. In setting up any training program therefore one of the main things to be accomplished is a disentangling of the responsibilities which are involved in standard procedure from those which are not involved in standard procedure and which call for the exercise of *judgment* by the minor executive. A conference of minor executives is admirably adapted to such an analysis.

One of the principal objectives for a foreman's conference is an analysis and identification of responsibilities. There are always numerous instances where no standard procedure has been set up which would take care of all situations with which a minor executive has to deal, and one of the most profitable lines of work which can be pursued in a foremanship course under the conference plan is a consideration of the intelligent discharge of all responsibilities. As a matter of fact the ultimate purpose of any training course for minor executives in any organization would be to get all persons who have charge of the work of others to discharge all of their responsibilities in an intelligent and acceptable manner.

CHAPTER IX

THE GENERAL PROBLEM OF SUPERVISION OF MEN IN INDUSTRY

Preliminary.—In all cases except where a man works individually in business for himself, it is necessary to provide for the supervision of men on the job. Where a man is in business for himself, he is his own boss. Just as soon, however, as his business grows to the point where he has to hire a man to help him, he is confronted with a new kind of a job—that of supervising another man at work. In cases where the total number of men employed in a shop does not exceed five or six, the owner of the shop often supervises and manages his work directly. If his business grows and develops to a point where he finds it necessary to have a working force of ten or more he usually finds it necessary to select a man from the working force to supervise and direct the work of the other men while he looks after the managerial side of the business. At this point the owner of the shop has secured a *foreman*—a man who represents him in dealing with the working force and at the same time must represent the working force in dealing with the owner. The foreman is, in fact, a man who stands between the management of a business and the working force as a sort of connecting link.

Where Foremen Come from.—To refer back for a moment to the case of the small business employing fewer than ten workmen, it should be noted that the owner, proprietor or manager of the business would, in selecting a

member of the working force to be a foreman or supervisor over the other workers, pick a man who had certain characteristics, such as (1) a thorough knowledge of the work and (2) some of the characteristics of leadership.

Notwithstanding the fact that American industry, generally speaking, has grown and developed to a point where many organizations employ thousands of men, we still find that foremen are selected from the working force by the management for much the same reasons as would be recognized by the small employer or manufacturer in selecting a man from a group of ten or a dozen workmen to be a foreman in his shop. As a matter of fact, industry is largely supervised, *on the actual working level*, by men who have been thus selected from the ranks of the working force and placed in charge of other workers.

Working Jobs and Supervisory Jobs Compared.—When a workman or a mechanic is assigned to do a job, he is primarily concerned with doing the necessary work in order to turn out a job which will meet with specifications furnished him. He is concerned with tools, machinery, operations, processes, stock and other practical things that he has to handle as a workman. The foreman, on the other hand, is primarily responsible for getting the work done. In his capacity as a foreman he does not, as a rule, deal directly with the tools, equipment, materials, and machinery. Instead of dealing with these things he has to deal with the men who do the work. He must plan and manage his work and his men so as to get the job done in a manner satisfactory to the management. In doing this he must select men to do the detail work and, in case there are any phases of the job which make it necessary to instruct the men, or plan their work for them, it is the foreman's job to work it out. The foreman is held responsible by the management for

getting all these things done and his success or failure will be proportional to the degree to which he can get the work done and at the same time handle his men so that they feel that they are being dealt with generally in a fair and square manner.

All of the jobs which a foreman has to do as a supervisor call for good judgment, skill in the management and planning of work, and real ability in personnel management. It is generally true that the job of supervising other men in the doing of their work is very often much more difficult than is the actual doing of the work itself.

Under present conditions, most foremen learn to perform their supervisory functions on the job by the method of trial and error. In only a very few cases has any organized attempt been made to give them any direct help or instruction which will assist them in handling their supervisory problems.

The Foreman's Assets.—Bearing in mind that a foreman is, as a rule, selected from the working force for such reasons as those indicated in the preceding paragraphs, the fact will probably be recognized that the foreman, as he is found in industry today, has many assets, among which the following may be mentioned.

1. *He is accustomed to getting results.* This is an outstanding characteristic, for, regardless of difficulties, annoyances, breakdowns, insufficient tools or equipment, or anything else that may occur he has the habit of getting practical results. This is certainly a valuable asset and one that is worthy of more recognition than is sometimes given to it in setting up educational programs for employed foremen.
2. *He knows the details of his job* better than anyone else in his department knows them. A successful foreman

has very much more than a *general* idea of how work can be done in his department. He has a detailed working command of exactly what is needed in order to produce the desired quality and quantity of work on time.

3. *He uses his practical judgment*, which is the result of a mastery of his trade plus years of experience, in a way that an inexperienced person can hardly appreciate. No satisfactory substitute has been found for the type of practical judgment which a man acquires through years of experience supplementary to a mastery of his trade or occupation.
4. *He knows his men* and knows how to deal with men in order to get the best results out of them. In order to function as a foreman it is absolutely necessary to deal with men with regard to their individual characteristics and abilities.

Regardless of how elaborate a program of personnel management may be established in an organization, the foreman on the job, who stands next to the workers on the job, is the personnel manager *de facto*, whether the fact is recognized or not. Successful systems of personnel management recognize this fact.

5. *He possesses at least the necessary knowledge and skill to meet the demands of his job*. This is an asset and a characteristic of foremen which should be fully recognized and appreciated. No foreman can continue to serve industry in the capacity of foreman unless he possesses at least the minimum degree of knowledge and skill necessary to hold down his job. As stated before, this fact should be clearly recognized in all plans for setting up and organizing educational programs for industrial foremen. This item probably

includes all of the items previously listed under this heading.

The Foreman's Liabilities.—The foreman's assets so far overbalance his liabilities that there is some danger of giving the wrong impression through mentioning or listing out items which might be classified as liabilities. It would, perhaps, be better to consider the following items merely as characteristics which should be recognized and evaluated in connection with the setting up of plans for conference work.

1. A foreman *thinks in terms of concrete experiences* and is apt to have some difficulty in thinking in terms of general principles. This characteristic is a peculiarly natural one and is a logical result of his training and experience. His knowledge is exceedingly specific and he has much more of it than he is usually conscious of himself. Experience in foreman conference work has demonstrated that it is worth while to help a foreman analyze his job and organize what he already knows. Such work makes his fund of information and his specific knowledge and skill of increased value to him in dealing with his problems on the job.
2. *He is a good deal of an individualist.* It is entirely natural that a foreman should place the interests of his own department above those of any other department of the concern which employs him. While this is listed as a liability it may very often be turned into an asset by bringing the foreman into such a frame of mind that he will cooperate with other foremen and at the same time maintain his interest in his own department.
3. *He tends to use rule of thumb methods.* Again this is a very natural characteristic for a practical man to

have. There are, however, many cases where the rule of thumb method is not the best. On the other hand, it is not at all unusual to find that many rule of thumb methods of doing things will stand close inspection—scientific investigation and check up will often justify the so-called rule of thumb procedure which has been developed on the job as a result of long experience.

4. *He tends to make decisions on the basis of a "hunch."*

The statement is often heard in industrial and business organizations, "D—n your hunch, I want facts." This remark indicates the degree to which men of a certain type of mind tend to discount the "hunch." It is doubtless true that it is inadvisable for a man in a supervisory capacity to do business, to too great an extent, on the basis of his "hunches." Recent investigations by psychologists, however, have tended to make the so-called hunch quite respectable as an element in making decisions. According to these authorities the "hunch," so called, is not a wild guess, but is a type of practical judgment or decision arrived at subconsciously; that is to say, without any conscious process of thinking out the problem. Recent investigations on this subject have pointed out the value of this sort of judgment and have shown that it is really based upon past experiences, many of which may have been forgotten as such. An eminent writer on practical psychology, Dr. Donald A. Laird of Colgate University, has brought out some reassuring facts relative to this matter and has shown that the so-called "hunch" is an exceedingly valuable thing, much more trustworthy than is commonly supposed.¹

¹ See an article entitled "Trust Your Hunch," in the *Dearborn Independent*, Aug., 1926.

What Should Be the Characteristics of an Educational Program for Employed Foremen?—The objectives of such a program will be at least partly indicated by the preceding incomplete list of assets and liabilities. Probably one of the outstanding objectives of such a program should be to help the foremen to analyze his job and his responsibilities and to promote constructive thinking relative to his job in all of its aspects. A man of the foreman type does not need miscellaneous information about general technical and administrative matters as much as he needs to have the knowledge which he already possesses better organized in order that it may be of more direct utility on the job.

Training courses organized in terms of general objectives are of very limited value in dealing with the foreman for the purpose of helping him to become more efficient on the job which he has. For example, abstract information concerning business administration, production engineering, plant organization and similar topics would, in all probability, be so foreign to his immediate problems that he would see no opportunity to apply the information furnished. Technical courses in mathematics, chemistry, psychology, mechanics and various engineering subjects likewise have a limited utility, or no utility at all, in accomplishing the indicated objectives of an educational program with employed foremen. Many attempts have been made to set up training courses for foremen which, instead of considering the immediate job which the foreman has; the responsibilities which he has to meet day by day are completely lost sight of and time and attention is devoted to giving the man "cold storage" instruction relative to the duties of the superintendent or manager. Such instruction is more than likely to miss the point entirely, so far as the man on the job is concerned, and is also likely to make him dissatisfied with

the position which he has and get the notion that the only worth-while thing for him is to secure a promotion to a higher executive position. It is a serious question as to whether a real service is rendered when the principal result of educational work is the increase of dissatisfaction on the job.

The Conference Procedure.—Experience in a wide variety of industries in practically every section of the United States has demonstrated that the conference, as an educational procedure with employed foremen, is remarkably effective in dealing with such objectives as are indicated in this chapter. Part I of this book describes the conference procedure in considerable detail. The chapters which follow in Part II contain a carefully selected array of sample material such as outlines of objectives, samples of blackboard work with explanations of same, cases and questions which have been found to work well in conference work and a few reproductions of actual analyses. This material is included with the thought that it may be of direct value to conference leaders of limited experience and of incidental value to men of wide experience in this field of work.

CHAPTER X

CONFERENCE TOPICS AND OBJECTIVES FOR FOREMAN GROUPS

Preliminary Statement.—The purpose of this chapter is to supply some specific information relative to conference topics and the outlining of objectives for conference work with foremen, with the thought that such information will be of direct assistance to conference leaders of limited experience.

Characteristics of Conference Topics.—The following list of conference topics is intended to indicate the kind of topics which can profitably be handled by the conference method.¹

1. Supervisory Responsibilities, Analysis of.
2. The Handling of Written Orders.
3. Verbal Orders, Directions and Suggestions.
4. Records and Reports.
5. Departmental Job Analysis.
6. Plant Organization Relationships.
7. Interest in the Job.
8. Dissatisfaction and Labor Turnover.

¹ Bulletin 36, Part I, Federal Board for Vocational Education gives suggestions as to topics for 82 Foreman Conferences. The Chamber of Commerce of the United States, in its bulletin entitled "Foremanship," lists 124 sample topics selected from various sources. Some of these topics would, however, necessarily be handled by the informational or instructional procedures.

9. Distribution of Supervision.
10. Safety and Accident Prevention.
11. Carelessness on the Job.
12. Leadership.
13. Production Difficulties.
14. Handling Green Men on the Job.
15. The Foreman as an Instructor.
16. Apprentice Training.
17. Cooperation.
18. Case Analysis or "Trouble Shooting."

It should be noted that every topic in this list can be handled so as to draw upon the experience of the foreman. Little or no subject matter *new* to the foreman would have to be introduced in order to secure valuable and detailed consideration of any one of these topics.

Topics such as "Wage Policy," "Problems of Distribution," "Selling Costs" and "How Our Product Is Marketed" would constitute a group of subjects which would obviously have to be handled in a foremen's meeting almost entirely by the informational procedure.

In handling such topics as "Training Workers" and "How to Administer First Aid" it would be necessary to actively teach a group of foremen. These topics and others of a similar character which *involve the ability to do something practical* are always most effectively put across by doing a complete instructional job.

Objectives for Conference Topics.—One of the most important things for a conference leader to do is to carefully think out and formulate his objectives in advance of trying to conduct a conference. Objectives may, of course, be stated or described in a great variety of ways. The exact wording is not important, more especially because of the fact that conference objectives are, in the majority of cases,

neither written down in advance nor referred to directly during the work of a conference.

Examples of Conference Objectives.—

Topic, "Interest in the Job."

Major Objective (Indirect) ²

To get the foremen so that they will apply interest factors intelligently in dealing with their men, in order to get them interested in their jobs.

Minor Objective

1. To bring out the fact that there are many factors which affect a man's attitude relative to wanting to work on his job.

2. To secure the appreciation of relative values of different interest factors with different types of men.

3. To secure an understanding of how the different interest factors can be applied on the job in practice.

Major and Minor Objectives.—In the preceding example it should be clear that the three minor objectives, or sub-objectives, would be easily recognized by the group members during the conference proper. It would, therefore, be unnecessary to announce them or advertise them in any way. The major objective—the one which would really count, would be expected to become apparent on the job, perhaps weeks after the conference was over. This

² An indirect objective is one which is known to the conference leader but which is *never announced to the group*. To announce such an objective as the one given above would tend to create the impression that the group members were falling down to some extent as foremen. This would set up a resistance which would, in turn, tend to neutralize any constructive results which might otherwise be secured.

would come about through improvement in practice on the part of the foreman.

Other Examples of Objectives.—

A. Conference Topic, “Safety and Accident Prevention” Major Objective (Indirect)

To reduce the number of accidents in the plant to the absolute minimum.

Minor Objectives:

1. To bring out, by analysis of cases, the actual or fundamental causes of accidents in the shop.

2. To identify the foreman's responsibility in each case.

3. To find practical ways in which each foreman can best meet his responsibility for safety first on the job.

B. Conference Topic, “The Handling of Written Orders” Major Objective (Indirect)

To secure a reduction in the number of mistakes made in handling written orders in the shop.

Minor Objectives:

1. To secure an array of data illustrating the more common mistakes which are made in handling such orders.

2. To identify the responsibilities of the foremen relative to incorrect, incomplete and illegible orders.

3. To bring out the cost elements involved in mistakes in handling orders.

4. To develop a desire on the part of each foreman to cooperate 100 per cent in the handling of orders, to

the end that errors in practice may be reduced, if not entirely eliminated.

C. *Conference Topic, "Analysis of Supervisory Job"*
Major Objective (Indirect)

To stimulate the foremen's job pride and get them interested in conference work.

Minor Objectives:

1. To have each man make an inventory of his supervisory responsibilities.
2. To have these responsibilities evaluated in various ways so as to develop the ability on the part of each foreman to view his job objectively from various angles.

Summary.—Conference objectives such as those here given indicate the general lines of procedure to be followed in conference work. They also tend to emphasize the difference between a conference and the ordinary methods commonly used for imparting information or for giving instruction.

In conducting a conference, a leader should know definitely, *what* he wishes to accomplish. He has no subject matter to teach or put across and he must rely almost entirely upon getting the material for analysis, discussion and conference consideration by drawing upon the experience of a group of men. A conference leader must be able quickly to evaluate what is furnished by the men and utilize it in the best possible way to advance his objectives.

The success of a conference leader is largely proportional to the degree to which he can deal constructively with all sorts of cases, comments, ideas and suggestions from his conference group. Also he must organize a mass of hetero-

geneous experience in such a way as to advance the thinking of the individual group members and the entire group as well. Finally, he must do all of these things without being arbitrary or appearing to dominate the situation in such a manner as to inhibit the full and free discussion of all questions presented for group consideration. A conference leader is likely to do all of these things well in proportion as he has his objectives clearly thought out in advance.

CHAPTER XI

CONFERENCE MATERIAL

Preliminary.—This chapter contains a carefully selected assortment of sample conference material.

The samples of actual blackboard work are intended to suggest to conference leaders of limited experience some ways of organizing data which have been found to work out successfully in practice.

A few excerpts from conference reports are also included for their suggestive value.

The cases which are included are all "real." Most of them were secured by the writer in foreman or leader training conferences which he has conducted in various sections of the country.

This material, together with that which is already available in such books as "The Foreman and His Job" by Allen, should supply a conference leader with sufficient "ammunition" to last him in almost any situation long enough to get a conference going in good shape on plant problems.

Preliminary Inventory of Responsibilities.—The preliminary job analysis charts shown on pages 146 and 147 have been found to be of value in the early stages of conference work with foremen. The men are asked to list out their principal supervisory responsibilities. This work of getting the list, naturally involves considerable discussion. This is one of the first steps in helping a foreman to analyze and evaluate his responsibilities.

It is not at all essential to get this list 100 per cent complete. The value of it lies not in the chart itself but in the *thinking* which the man does in making it out.

Such a list of supervisory responsibilities may profitably be evaluated in a number of ways.

The rating on Chart A shows the degree to which the foreman believes it to be desirable and necessary to give personal attention to certain of his responsibilities. A low rating (near 0) indicates that a given responsibility is delegated, almost entirely, to a sub-foreman or to an experienced workman. A high rating (near 10) indicates that the foreman does not delegate the responsibility very much, if any.

The ratings on Chart B indicate the degree to which the foreman has trouble or difficulty in discharging his responsibilities. A low rating here indicates little or no trouble or difficulty—a high rating indicates considerable trouble, difficulty or worry. The graph as shown on Chart B is sometimes called the foreman's "worry curve."

It should be perfectly obvious that charts similar to those here reproduced are very useful to a conference leader in that they help him to set up objectives for future conference work.

Attention is particularly called to the fact that it is not important to attempt to get such charts as the above entirely complete and *exact*. *The value of such charts lies in the direction of assisting foremen to think and to make a beginning in analyzing their jobs and identifying their responsibilities.*

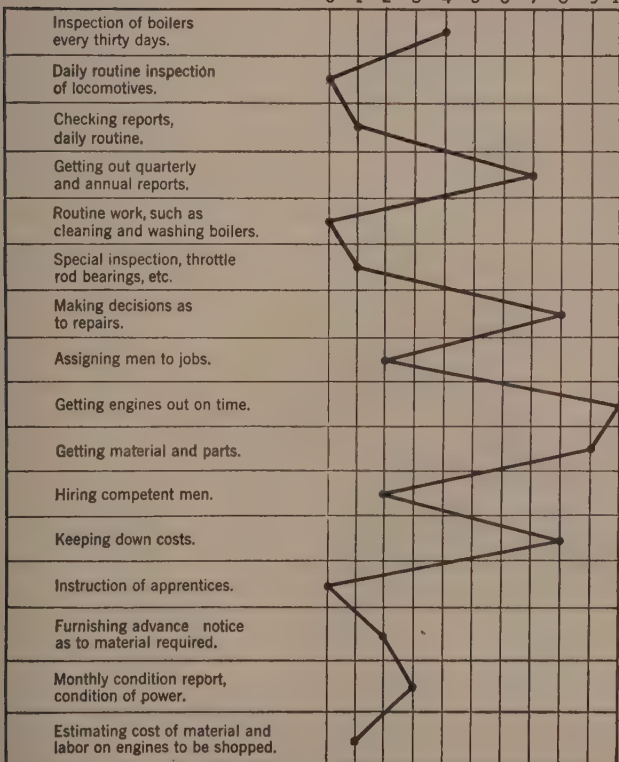
A third evaluation which is often used is made with respect to the time distribution.

PRELIMINARY INVENTORY OF RESPONSIBILITIES

ROUNDHOUSE FOREMAN

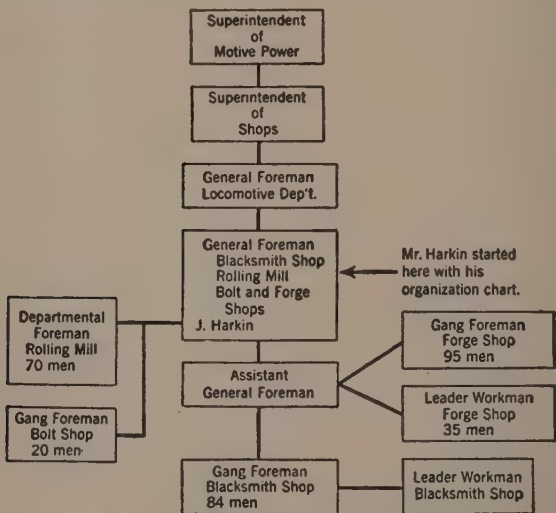
Chart B

0 1 2 3 4 5 6 7 8 9 10



Shop Organization.—

Experience with many foremen in a large number of organizations has demonstrated that the subject of shop or departmental organization is one which it is usually profitable to deal with in foreman conference work. Instead of making an informational presentation of the general plan of organization of the company, each foreman is assisted in working out a chart of *his own job* on which he indicates (1) his place relative to the higher plant executives and (2) the organization which he supervises. Each individual takes his own job as the starting point in making his organization layout.



ORGANIZATION CHART

Made by

FOREMAN BLACKSMITH, SOUTHERN PACIFIC SHOPS

ORDERS

CASES AND POINTS FOR DISCUSSION

1. Should a foreman ever give orders to men who are responsible to another foreman?

2. A foreman sees a machine running which should have been shut down when the man who last used it was through with his work. He shouts out the following order: "Shut that machine down, somebody." Is there anything wrong with such an order?

3. A foreman in a certain factory always took pains to be polite and courteous in giving his orders. He was accustomed to preface his orders with "Please," or "I wish you would do this." Is such a procedure to be recommended?

4. A boilermaker foreman gets the following order in writing. "Make one 50 gal. tank suitable for holding water, open at one end." What should he do with this order?

5. The foreman of the repair and alterations department in a large oil refinery received the following written order: "Move pump from where it is to where it ought to be." There were several hundred pumps of all descriptions in this oil refinery. The result of this order was considerable talk and a lot of more or less aimless running about to find out what pump was to be moved. How might such an order be handled by a foreman?

NOTE: In this case it happened that the person who issued this order expected the foreman to come to him for more information before starting the job.

6. The store department in a certain shop received the following written order from a shop foreman: "Four dozen

$\frac{3}{16}$ " x $1\frac{1}{2}$ " bolts." The store has four kinds of bolts which might be used for filling this order, i.e., round head stove bolts, countersunk head stove bolts, carriage bolts, and ordinary machine bolts. Who is responsible if the wrong kind of bolts are sent out on this order? Has the order clerk or counter man in the store department any responsibility?

7. The foreman of a railway boiler shop received the following order in writing: "Repair leak in oil tank." There was no explanation as to what tank was meant, where the tank was located, or when the job was to be done. The foreman sent a man out to locate the job, and after three hours he located the tank in question. It belonged to another department (Bridge and Building). By the time the job was located it was found that the tank had been painted and the persons in immediate charge did not want any work done on it. Result: Three hours wasted time. What was the trouble with the order as written?

8. A locomotive comes into the shop with the head of the water tank damaged. The boilermaker foreman measures up the job, a round bumped head, and orders a sheet of steel for a new head. The store reports back that no sheet of sufficient size can be found in the city. The superintendent of motive power takes the matter up and accepts the boilermaker foreman's suggestion to order a new head from the shop where the locomotive was built. The superintendent of motive power writes duplicate memos on leaf of notebook. One of these goes to the mechanical engineer, the other to the shop superintendent. The shop superintendent turns his copy over to the boilermaker foreman. While the boilermaker foreman has his copy of the memo in his pocket, the mechanical engineer calls him to his office and makes the following statement,

“We cannot get a sheet large enough for that tank head so we are going to order a new head.” The boilermaker foreman then throws his pencil memo away, thinking that the mechanical engineer will look after ordering a new head. The boilermaker foreman did not think it necessary for him to make a special form requisition, in view of what the mechanical engineer had told him. The result of this was that no order was written and the new head was not ordered until it was discovered three months afterwards that no order had ever been issued. About one month after the boilermaker foreman first became acquainted with the situation he made a verbal inquiry at the store department concerning the new head. The store department advised him that a tracer would be sent out.

One result of this delay was that a tender had to be changed from one locomotive to another whenever an engine of the same type as the one originally damaged was delivered by the mechanical department to the operating department because the original engine had a tender which had been borrowed from another engine of the same type. This caused a good deal of unnecessary work.

In the discussion of this case, the following points were developed:

1. In the opinion of the foreman the mechanical engineer is not responsible for having jobs done. He is responsible for checking up on certain orders, especially those designated as special form orders, to see that all material ordered complies with current standards. In view of this fact, it would be difficult to show that the mechanical engineer was responsible for failure to issue the original order.
2. All so-called special form requisitions originate with

the head of a department. In this case the shop superintendent is the man in whose office the order should have originated.

3. Under ordinary circumstances a special form requisition gets started on its way through the written or verbal recommendation or report of a foreman. It appears that these special form requisitions are issued about one-half of the time on the verbal recommendation of the foreman. The other half of the time they are issued on written recommendations.
4. The verbal inquiry at the store by the boilermaker foreman resulted in the promise of someone in the store department to send out a tracer. Because of the absence of any written requisition for a tracer the fact that no order was on file was not discovered for a period of two months after the original tracer was sent out. After an extended discussion of this case the following conclusions were reached:
 - (1) If a carbon copy of every special form requisition was sent to the foreman concerned, such a delay as occurred in this case would be impossible. Had this practice been followed, the boilermaker foreman would have checked up immediately if he failed to get his copy showing that the new head for the tank had been ordered.
 - (2) If all inquiries concerning such matters were made in writing, the store department would automatically look up the original order. In this case, no attempt was made to trace the original order because the transaction was made by word of mouth. This again would be a double check on the situation and make it still more unlikely that such a mistake would occur again.

9. A written order signed by a foreman in a railroad shop called for a $1\frac{1}{4}$ " air pump throttle and a $1\frac{1}{4}$ " air pump governor for a locomotive which belonged to a contracting firm. This order goes to the store department by the regular route. A counter man sends the order back to the job by a "runner" because no $1\frac{1}{4}$ " air pump throttles are in stock. Someone in the shop tells the "runner" that packing was what was needed on the job instead of what the order specified. Subsequently, packing for the job was sent to the shop. The results of this transaction were as follows:

- (1) The shop had some packing which it did not need and returned the same to the store department with a credit requisition.
- (2) The original order was held at the store pending the delivery of the material called for.
- (3) The foreman on the job found that the only way in which he could get the job done on time was to rob some other locomotive of its air pump throttle and governor.
- (4) The engine for which the new throttle and governor were ordered went out of the shop with parts installed from another engine without any charge for material having been made.

NOTE: This case illustrates some of the things which may result from guess work and substituting verbal orders for regular written orders. It may be used to advantage as an illustration by the leader.

10. A section foreman (railroad) was a little late in getting to work one morning. When he arrived his men had already placed the hand car on the track, ready to start out. When the foreman arrived the following dialogue took place:

FOREMAN, "Who told you to put that car on the track?"

MAN, "We thought we would get everything ready to start out."

FOREMAN, "Take that car off of the track."

(Men remove car.)

FOREMAN, "Put it on the track."

(Men replace car.)

FOREMAN, "Take it off."

(Men remove car.)

FOREMAN, "Now put that car on the track and remember who's boss of this gang."

What qualities of leadership does this procedure indicate?

NOTE: While this case illustrates a type of foremanship which is rapidly becoming obsolete, it has some value for purposes of analysis. It is recommended for use at the beginning of a conference on orders, directions and suggestions.

11. The sales department of a concern manufacturing oil well pumps sends in an order calling for $2\frac{1}{2}$ 2" pumps. What disposition should be made of such an order?

12. A foreman in a structural steel plant gets on order for 12 12 x 12 I beams. The order is to be shipped to a city 125 miles distant. When the shipment is received the consignee finds that he has 12 12" I beams each 12 feet long. He ordered 12 12" I beams each 12" long.

It should be noted that the order received by the foreman carried neither feet (') nor inch (") marks. What was the foreman's responsibility in this case? Why?

EXAMPLE OF BLACKBOARD WORK

Railroad Shop Foreman Conference.

Subject: WRITTEN ORDERS.

Case: Foreman of blacksmith shop receives a written order for "5 connecting rods for switch stands, same as

made on order 12532, dated May 10, 1924." (This order is received Jan. 25, 1926.)

ERROR	EFFECT	COST ELEMENTS	SUGGESTIONS AS TO REMEDY
Order passed on in this form by store department.	Nobody in shop knew what order 12532, May 10, 1924 called for. Man making order fails to get what he wants. A lot of time wasted on unnecessary talk.	Wasted time by all parties concerned. Job delayed unnecessarily.	Order should state specifically and clearly what is wanted. Reference to an order filled two years previously should never be used on a written order. Store dept. should return such an order to the person who made it and not pass it on to a shop foreman.

INTEREST

CASES FOR DISCUSSION

1. A shoemaker can earn from \$4 to \$5 a day making shoes in his own little shop in a small town. He is a fairly competent man who is able to make a pair of shoes completely from the raw material to the finished ready-to-wear shoe. He closes up his small shop and goes to work in a shoe factory nearby, earning \$8 a day performing one operation only. In the course of a few months he is back in his little shop better satisfied with the \$4 or \$5 a day that he can earn in that way than he was with the \$8 a day wage on specialized factory work. What does this case indicate?

2. The manager of a garment factory finds that changing operators from one class of work to another tends to reduce interest in the work. The factory operates under

SAMPLE OF CHART AS WORKED OUT

NAME OF ORDER	NUMBER	FROM	TO	PURPOSE
Work Order or Work Slip.	2325	Department. Foreman. Foreman.	Department. Foreman. Man.	Specify work to be done. Keep track of charges.
Order on Storekeeper.	4218	Any Foreman.	Store.	Get material from Store.
	4219	Roundhouse Foreman.	Store.	Get lubricants for locomotive in service.
	4915	Shop Foreman.	Store.	Get material shipped to outside points.
	6317	Shop Foreman.	Store.	Give store advance information as to locomotive material needed soon.
Store Completion Order.	2497	Shop Foreman.	Store via runner.	Notify store of completion of store order 4216.
Store Order.	4216	Store to Supt. of Shops.	Foreman.	Have shop make material.
9-Purchase Requisition or (Material Requisition).	4205	Foreman to Supt.	Mechanical Engineer.	To get stock not regularly carried.
Work Orders.	Form 30 Serial No.	Supt. of Shops.	Foreman.	Give information to foreman concerning special jobs.
Shop Orders.	2384	Supt. of Shops.	Foreman.	Keep track of costs on jobs, etc.

IN A FOREMAN CONFERENCE—ORDERS

ERRORS OR MISTAKES	CAUSES	REMEDIES SUGGESTED
Insufficient information. Incomplete. Illegible—poor writing—dirty. Order (as written) could not be carried out. Person giving information on which order is based fails to give correct data.	Too much hurry—carries in pocket too long. Conditions not known at the time order is written. Man doesn't know.	Foreman can take time to find out from man just what is wanted and not sign any orders hurriedly. Foreman gives the necessary verbal orders to get job done. Conditions could have been known to man.
Foreman gets only part of stuff. Six weeks delay getting material. Order delayed. Wrong kind of material. Material for some other department. Order incomplete, illegible, delayed, incorrect.	Abnormal demand. Material should have been secured before Store Order was issued (Opinion of Foreman). Order ambiguous, example, $\frac{1}{2} \times 1\frac{1}{2}$ bolts, as explained elsewhere. Substituting material unintelligently. Deliveryman's error. Delivery man doesn't have information. Exchange material not forwarded.	Foreman may give advance information to Store Dept., in some cases on S. O. work, return store order to store. Take matter up with Foreman before issuing substitute. Foreman can write on order where material is to be delivered and Store should mark to correspond.
No trouble in past year.		
No trouble.		
Delayed order. Short of material when needed.	Delayed shipment.	Give as much advance notice as possible.
Sometime lost in the shuffle—delay in pick up.		Recheck from Foreman to Store via runner.
Stock delivered short.	Insufficient on hand in store.	Store should hold back order until delivery is completed.
Delay in getting material. Too much material ordered.	Foreman does not get information (duplicate order). No one definitely responsible for anticipating needs on new equipment. Man issuing 9- order had insufficient information.	Foreman can give information to his immediate superior and explain his position in the matter. Notify foreman if 9- is canceled or cut. Suggest that someone higher up in organization issue 9-.
No trouble.		
No trouble.		

the piece work plan. To what can you attribute the loss of interest in such a case?

3. At the time of the Japanese earthquake a garment factory on the west coast received a large rush order from the American Red Cross. It was necessary that this order be completed in nine days in order to be shipped on a certain steamer. This rush order necessitated changing operations for the employees. In handling this situation the employees were guaranteed their regular wages and the importance of the work was explained to them. Under these conditions there was no evidence of decrease in interest in their work. What interest factors come into play in this case?

4. In a certain large factory a young man nineteen years old was given a job in the boiler room, his work being to keep the ash pits cleaned out. The chief engineer sized this young man up as being a good prospect for a better job. At the first opportunity he transferred him to the engine room and explained that he was going to start him in on oiler's work with the idea that he would eventually become a stationary engineer. After one week on this job the young man asked for his old job back. On being asked why, he stated that the new job involved too much responsibility. How would you explain this attitude?

5. In a plant manufacturing a line of high grade machinery an expert mechanic is given the job of grinding threads on taps and gauges in the tool room. At the end of ten or twelve months this man asked for a transfer to some other class of work. He did not lose interest in his work, but because of the extreme accuracy required, together with the accompanying eye strain, the job "got on his nerves." On being asked what he would have done had the transfer been denied, he immediately replied that

he would have quit the job entirely. Does this case denote loss of interest or something else?

6. A man in a large machine shop is assigned to work on a large boring mill. He is the only man in the shop who can handle this machine and get important work out in a reasonable time. At the end of eighteen months of this sort of work he asks the foreman for a transfer, stating that it is a question of being transferred to another job or quitting entirely. On being questioned the man states that he has gotten into such a condition that he can hear the peculiar noise of the back gears on this machine every night after he goes home. The foreman transfers the man to another job and after two months he asks for his old boring mill job back. What does this case illustrate?

LEADERSHIP

CASES FOR DISCUSSION

1. A man at the head of a certain organization followed the practice of calling all of his assistants together whenever any one of them made a mistake. He consistently followed the practice of calling down the entire group instead of calling each mistake to the attention of the person who made it. Does this procedure indicate good leadership?

2. A certain executive discussed the shortcomings and mistakes of one of his assistants with the men under this assistant whenever the assistant was engaged in outside work. Is this good leadership?

3. A foreman has developed the habit of never admitting a mistake. He always has a plausible alibi and is remarkably successful at "passing the buck." How does this characteristic affect his leadership with his men?

4. A foreman of a pipe-fitting gang was called upon to

lay an emergency suction line down to a stream back of one of the buildings of a paper mill to get additional water for a special purpose. The weather was cold and everyone concerned knew that it would be a disagreeable job to lay the pipe line. When the foreman got his men and materials on the job he said, "Come on boys, we want to get this job finished up." He waded into the stream with his hip boots on before he asked any of his men to go in. The result was that the men did not grumble but went right ahead with the job. Was this good foremanship? Would this man have practiced better foremanship if he had stayed out of the water and directed the work to be done?

5. A foreman was sent out to have his gang move a heavy transformer from a railroad car to a platform, a distance of about ten feet. When the timbers and skids had been placed and they were just about ready to move the transformer, the foreman was called away. He asked one of his men to look after the job. When the foreman returned the transformer was down between the platform and the car. A few minutes after the return of the foreman the executive engineer came along, saw the transformer where it had fallen and asked, "Who did that?" The foreman immediately replied, "I did."

Did the foreman exhibit any of the qualities of leadership in this case?

CARELESSNESS AND INSTRUCTIONAL RESPONSIBILITIES

CASES FOR DISCUSSION

1. A man who had been employed on stills at an oil refinery for several weeks was transferred to a type of still with which he was somewhat unfamiliar. He was directed by his foreman to take a thermometer out of a certain still. The man had never done this job before. Instead of

removing only the thermometer the man unscrewed the thermometer well. This permitted gases and vapors to escape which caught fire and caused serious damage to equipment. Was this man careless? If so, how would you classify this sort of carelessness?

NOTE: Through discussion, the members of the group may be expected to agree that this was a case of apparent carelessness, due to ignorance. The man was not instructed as to how to do this job.

2. A machinist's apprentice who had had considerable experience with belt-driven machinery but very little experience with electrical machinery was told to start at 15 H.P. D.C. motor. He had never started a motor before. He asked for instructions as to how to start the motor and was told to close the switch and then shove the other handle over. He "shoved the other handle over" so fast that both fuses were blown out and the work was delayed. Was the apprentice careless?

NOTE: This was a case of apparent carelessness, due to ignorance. The instructions were not clear.

3. A railroad shop painter who was working on a scaffold, finishing up a rush job on an engine tender, became so much interested in his work that he backed off the end of the scaffold, and was painfully injured. Was this a case of carelessness? Why?

4. An electric welder working in an erecting shop fails to place the shields as furnished to him to protect other men working nearby. A man working on an adjacent job is badly "flashed." Does this case illustrate carelessness?

5. A laborer engaged in washing shop windows places his hand against a pane of glass and tries to shift his ladder. His hand is badly cut when it breaks through the window. In your opinion was the man careless?

6. An iron moulder's helper in a railroad shop uses a track maul to rap a large pattern preparatory to drawing it from the sand. The maul rebounds and strikes the man in the forehead. What kind of carelessness does this case illustrate?

7. A foreman of a machine shop tells a man to make six springs of a certain diameter out of $\frac{5}{16}$ " wire. The man has wound springs before but has never had occasion to wind one out of stock as heavy as $\frac{5}{16}$ ". In the course of a half hour the man looks up the foreman to tell him that the stock keeps breaking off and that he can't get started. The foreman asks him a few questions about how far his tool is away from the job and other details and sends him back to the job. In fifteen or twenty minutes more the man comes around to the foreman again and tells him that the stock breaks off every time he gets started with the spring. This time the foreman goes over to look at the job and immediately sees what the trouble is. The man drilled a hole in his mandrel for the purpose of catching the end of the $\frac{5}{16}$ " but he failed to countersink the hole. This caused the wire to bend so sharply that it broke off every time the man started to wind the spring. The foreman told the man to countersink the hole and it would work all right.

Could the foreman be justly criticized for not giving the man this information at the time he gave him the job?

Would he have been meeting his responsibility better as a foreman if he had asked the man if he had ever made a spring anything like the ones wanted?

What, in your opinion, would be the best way for a foreman to avoid such a waste of time on the part of one of his men?

8. The foreman of an assembling department was con-

fronted with the fact that defective equipment was, in some unknown way, going out of his department. The system of inspection and checking was such that it was extremely unlikely that these defective jobs could go out if all of the men who worked on the final assembling and testing work followed established practice. This situation naturally caused the foreman concerned a great deal of worry and embarrassment. He inquired of the men who were responsible for certain final tests on the equipment if they were making all of the checks and inspections required, and they replied in the affirmative. The defective work, however, continued to come through. As a last resort, the foreman took up a position where he could watch a certain man work without the man knowing that he was being watched. He discovered that this man would slight about every third machine that he worked upon. This was strictly against orders and it so happened that all of the defective machines which had been going through showed defects which this man should have corrected, had he done his work thoroughly. The foreman confronted the man with the fact that he had discovered his careless and irresponsible procedure. The man fully expected to be fired then and there. The foreman, however, kept his head and explained the seriousness of the situation without losing his temper. After discussing the matter at some length he told the man that he might go ahead and work for the rest of the day, and that he would see him after working hours that night and let him know what he had decided to do about the case. It so happened that the foreman knew that this man had a family dependent upon him and that he was trying to buy a home on the installment plan. In the small city where this industry was located it was improbable that the man could have found employment in

any other factory. The foreman gave the man all of one day to think about what it would mean to him to lose his job that night. After working hours the foreman had another talk with the man and emphasized the importance of having the job done correctly and completely and finally wound up by telling the man he had decided not to discharge him then and there but gave him a chance to make good. The result of this case was that the negligence of the man in his work was completely cured and from that time on he was thoroughly dependable.

NOTE: In the discussion of this case the foremen of the plant stated that in their opinion the man was "roasted over a slow fire." The foreman who handled this man stated that if the man could be made to realize the seriousness of his carelessness on his job and do the work correctly that it would be better for the company to keep him than it would be to break in a new man on the job. In the opinion of the foreman it was entirely possible that a new man might be even more careless than the old man and might cause an equal or even a greater amount of trouble. Does this case illustrate good or bad practice in handling workmen?

COOPERATION

CASES FOR DISCUSSION

1. In a certain manufacturing plant a foreman of one of the manufacturing departments has two repair jobs to be done, both of which are equally important and urgent. The foreman reports this situation to his superintendent. The superintendent sends an order through the master mechanic to the foreman of the repair and alterations department. This foreman has charge of a large force of mechanics and is responsible for having repair done throughout the plant. The plant where this case occurred

covered more than forty acres, and there were many buildings of different types in which manufacturing processes were carried on.

The foreman of the repair and alterations department, who, for convenience, may be designated as foreman B, proceeds to carry out the order received through his immediate superior, the master mechanic. He assigns two men to job No. 1, and these men go over to the manufacturing department and start work on this job. With respect to job No. 2, he decided that it was advisable to have a certain amount of work done on this job in the shop, the idea being that the men who are working on job No. 2 in the shop will subsequently take their material over to the manufacturing department and install it. The foreman of the manufacturing department, who may be designated as foreman A, sees two men working on job No. 1 while so far as he knows, job No. 2 is not receiving any attention. Foreman A takes this matter up with the two men working on job No. 1; explains to them that he has two jobs that have to be done and requests one of the men to start on job No. 2. One of foreman B's men leaves job No. 1 and starts to work on job No. 2, with the result that progress on job No. 1 is delayed and work on job No. 2 is duplicated. Foreman B drops in to look over the job and finds that foreman A has changed his assignment of work and has an unpleasant argument with foreman A. Foreman B thinks that foreman A has interfered with his work. Foreman A did not realize that he was interfering and he took the action he did because of his anxiety to resume operations with his equipment.

NOTE: A very profitable discussion of this case can be promoted by asking for suggestions as to how this particular situation could

have been avoided. In using this case in foreman conference work the following five suggestions have been secured from a number of groups of foremen:

1. Foreman A could have asked Foreman B for information as to why job No. 2 was apparently not receiving any attention.
2. Foreman A could have taken the matter up with the superintendent for the purpose of finding out why job No. 2 was not being worked upon.
3. Foreman B could have informed Foreman A with respect to his plans for handling the two jobs.
4. The two men working on job No. 1 could have referred foreman A to their own foreman (B) before shifting jobs.
5. Foreman A could have kept his finger out of the pie entirely. In view of the fact that he was in the clear, having made his report to his superintendent relative to the two jobs to be done, he could have sat tight and waited for something to happen.

These five possible ways of avoiding such a situation may be considered (1) from the standpoint of whether *any* kind of cooperation is involved; (2) whether the cooperation involved is along vertical or horizontal lines; (3) with respect to which is the best procedure in such a situation.

2. In a certain chemical plant one of the foremen was designated as chief of the fire department. It was his responsibility to assume charge of the entire plant fire department whenever a fire occurred. One day a fire started in one of the warehouses connected with the plant. The fire chief directed his men properly and had them on the job with a sufficient number of streams of water to handle the emergency. A foreman from another department

who happened to be in the vicinity of the fire, noticed that a man had a stream of water playing into a window opening below where the fire was burning. The foreman pointed out to the man who was playing this hose that the fire was higher up in the warehouse and that he should change the location of his stream. The man accepted this suggestion and changed his hose accordingly. The fire chief came along in a few minutes and used language resembling fireworks because the man was not following his orders as given. The fire chief knew that there was a large amount of benzol in the warehouse and his object in having this man play a stream of water in through the "cold" window was to drench it so that sparks from the fire in the upper part of the building would be less likely to cause an explosion.

NOTE: In this case the foreman who made the suggestion to the man on the job did not know enough about the conditions to cooperate. This is a good illustration of how attempts to cooperate, where a man lacks sufficient information, are very likely to result in interference rather than cooperation.

3. A fire occurred on the property of a certain railroad shop. Fire company No. 2 answered the call in the regular way. The assistant foreman of the roundhouse ran over to the fire to see if he could be of any assistance. When he saw that the captain of fire company No. 2 was on the job, the roundhouse foreman left the job of putting out the fire entirely in the hands of the captain. The job was handled satisfactorily and the fire was extinguished with comparatively small amount of damage, although it could easily have developed into a costly blaze.

In this case the roundhouse foreman showed very good judgment and cooperation. The man who was designated as captain of fire company No. 2, and who filled that posi-

tion in emergencies was regularly employed in the shop as a machinist's helper. In an emergency such as this, however, he immediately dropped his status of machinist's helper and became captain of a fire company. While some foremen would have presumed to give orders to a man regularly employed as a machinist's helper under such conditions, this foreman showed his good judgment and common sense by recognizing that the machinist's helper and not he, was in charge of the work.

4. In a plant manufacturing automotive electrical equipment a rush order was received from a certain manufacturer which made it necessary for two crews to work overtime in order to complete the order. The instructions were that the order was to be completed and then loaded into a freight car to be picked up by a freight train passing through the town at 2 A. M. This overtime involved two foremen, The foreman of the final assembling department, and the foreman of the final inspecting and testing department. The foreman of the assembling department went out to dinner early so as to be back on the job and have the work put through with a safe margin of working time. On his arrival at the plant after dinner, he found that the other foreman involved had just gone out to dinner. He looked into his department and saw that his men were working on a type of equipment for which there were no rush order, while the material that was supposed to be gotten out that night was not being worked upon. He went into the other foreman's department, explained the situation to the men and directed them as to what was to be done.

NOTE: This is a case which illustrates how a foreman is sometimes justified in giving orders to men who work under the supervision of another foreman. In this case the foreman who went into

another man's department had full information so that it was not a case of interference, but full cooperation, not only with the other foreman but with the company.

5. In a railroad shop the matter of handling orders for material was organized in such a manner as to cause frequent delays in the delivery of material for jobs. One of the foremen who had been caught two or three times and blamed for delaying a job where the real cause for the delay was slow delivery of stock, decided to accumulate a little surplus of material for emergency use. This was contrary to orders. By this method, however, he was able to get jobs out on time much better than he could otherwise have done. On one particular rush job he had the job done before the stock which was supposed to be used for it had been delivered to him. Does this case illustrate disobedience of orders or cooperation with the superintendent of shops?

6. A machine shop foreman states that the liner castings sent to him from the foundry often have pieces of scrap or "shot" from the tumbling barrel jammed into the cored holes. This results in a great deal of breakage of drills in connection with the first machining operation. The castings are delivered to the store department from the foundry and then charged out to the machine shop by the stock-keeper.

Questions.

1. Is the foundry foreman responsible for having the cored holes "clear" or does his responsibility end when the castings are cleaned and delivered?

2. Is the store department in any way responsible for having the cored holes in the castings "clear"?

3. Is the man who chucks the castings, runs the drill in and breaks it off responsible for breaking the drill?

4. What suggestions have you for correcting this difficulty?

7. An electric railway company decided to build 50 new cars in its own shops. The mechanical engineer and the electrical engineer were "at outs" with each other. The mechanical engineer designed the trucks without consulting the electrical engineer who, in turn, ordered the motors without reference to the drawings of the new trucks. When the motors arrived they did not fit the trucks as built. It was necessary to do considerable machine work on the motor frames before they could be mounted. This extra work cost the company approximately \$50.00 per truck or a total of \$5000 for the entire job.

Did either one or both of these men fall down in the meeting of any responsibilities which could be definitely classified as a part of their jobs? Why?

8. A foreman needed 6 bars of tool steel for a special maintenance job for another foreman. Standard procedure in this plant did not call for the approval of small orders of this sort by the superintendent. The foreman made a requisition on the purchasing department for the six bars required. The purchasing department ordered 3 bars. The repair job was delayed. Who was responsible? Why?

SAMPLES OF BLACKBOARD WORK

a. THE IDENTIFICATION OF RESPONSIBILITIES

SUPER- VISORY RESPONSI- BILITY	MANA- GERIAL PROBLEM	COST ELEMENTS INVOLVED	WAYS OF CONTROLLING COST ELEMENTS
Foreman is responsible for knowing condition of his equipment.	To keep equipment in operation.	1. Time of men lost during break-down. 2. Interruption of work in department. 3. Cost of emergency repairs. 4. Interference with work of plant as whole.	1. Foreman can, to a considerable extent, anticipate trouble and have certain spare parts on hand. 2. Foreman can check up frequently on condition of machines. 3. Foreman can instruct his men with regard to the care of machines and see that his instructions are carried out:

b. THE FUNCTION OF THE PURCHASING AGENT

In connection with the discussion of orders and delays on jobs because of slow delivery of material, the question was raised by the foremen as to the desirability of having a purchasing agent for the plant. Instead of sidestepping this question it was thoroughly discussed. The blackboard work done by the leader is here reproduced.

Purchasing Agent's Job

1. To purchase necessary stock and supplies at the lowest market price consistent with quality.
2. To check all requisitions and determine if material is actually needed: (1) Check up with store room; (2) Furnish substitute; (3) Check amount; (4) Check kinds.
3. Follow up orders and get prompt delivery.
4. Keep in touch with the trend of commodities.
5. Be familiar with general plant conditions.

Having a Purchasing Agent in the Plant

ADVANTAGES	DISADVANTAGES
1. He is in a position to know the general requirements better than any individual foreman.	1. Sometimes cuts requisition in half. <i>Note</i> —Above could be eliminated by cooperation between purchasing agent and foreman.
2. He knows more about current prices than the foreman is expected to know.	2. He sometimes substitutes material not suitable for a particular job.
3. He has on file detailed information as to where all material and equipment can be had.	3. Too much red tape.
4. Saves foreman's time by attending to details on buying.	4. Causes delays in getting material. (Exceptional cases offset by better prices obtained.)
5. Can order in larger amounts and thereby get better prices.	
6. Check on requisition as to quality and quantity.	

c. LABOR TURNOVER AND THE JOB OF THE EMPLOYMENT DEPARTMENT

PART 1. Labor turnover means losing an old worker and hiring a new man to fill his place.

PART 2.

ADVANTAGES	DISADVANTAGES
1. When old man can be replaced by a new man who has better qualifications.	1. Slowing down production, and resulting in increased cost of production.
	2. Lowers morale.
	3. Damage to equipment.
	4. Increased number of accidents.
	5. Damage to finished material.

PART 3. *Analysis of Employment Department's Job*

ADVANTAGES	DISADVANTAGES
1. Saves foreman's time both during working hours and his own.	1. Too much red tape.
2. Dept. has knowledge of entire plant and work to be done.	2. Sometimes wrong man is hired.
3. Keeps records of all applicants.	
4. To keep record of all men employed in plant.	
5. Can furnish a better and larger group from which to select a man than any individual foreman could furnish.	
6. Keeps undesirable men out of plant.	
7. Is clearing house for transfers.	
8. Can have all records up to date and in one place.	
9. Is a definite place for applicants to apply for jobs.	
10. Can act as preliminary screen for applicants.	

PART 4.

Labor Turnover

COST ELEMENTS INVOLVED	WHAT FOREMEN CAN DO TO REDUCE COST ELEMENTS
1. Damage to tools and equipment.	1. Better instruction of new men.
2. Cost of hiring.	2. Closer cooperation with the employment department.
3. Cost of breaking in new men.	3. Be straightforward with men.
4. Lowered morale.	4. Know your men and use your head.
5. Increased cost of production.	5. Improve working conditions.
6. Increased accidents.	6. Cooperate with order departments.
7. Damaged material.	7. Check up on all orders.

Discussion of Preceding Example.—The blackboard work reproduced on page 173 is subdivided into four parts. These parts are discussed separately in the following paragraphs:

1. By means of a brief preliminary discussion the leader secured a statement from one of the group members. This statement was accepted by the entire group as indicating *their understanding* of the meaning of labor turnover.
2. This is an example of a pro and con analysis showing the advantages and disadvantages *as supplied by the group*. Some of these items were, of course, mentioned because of questions asked by the leader. In the course of the discussion it became apparent that a number of the men felt that a lot of their troubles with respect to labor turnover were due to the inefficiency of the employment department. There was, as

a matter of fact, considerable criticism and comments were made by several foremen to the effect that if each foreman were permitted to hire his own men, a lot of these difficulties would be eliminated. The leader therefore proceeded to make an analysis of the advantages and disadvantages of having an employment department. This is shown as specimen three.

3. The inventory of advantages and disadvantages of having an employment department includes only such items as were supplied by the group members. These items were secured in connection with the discussion involved in the analysis of cases.

By the time the advantages had been listed out together with only two rather general disadvantages to offset them, the group as a whole decided that the employment department really had a job in the plant. They were also brought to the point of seeing clearly that the real solution for many of the small annoyances and petty difficulties which had loomed so large at first, could easily be solved by a little real cooperation between the foremen and the employment office. Cooperation, of course, works both ways.

4. Specimen No. 4 shows another inventory of items resulting from a discussion of the specific cost elements involved in the procedure of breaking in new men, together with some suggestions as to what the foremen can do to keep these cost elements down to the lowest possible figure.

EXCERPTS FROM CONFERENCE REPORTS

The following report is included as a sample of a report or summary of the work of a foreman conference. This is cut from an actual report and appears here just as it

was prepared to serve as a summary of discussion for the members of the conference. This report also illustrates a good example of conference work where all of the data and all of the suggestions were secured *from the group*.

a. SESSION ON LABOR TURNOVER

The subject of "Turnover" was explained by the leader and the following case offered for discussion:

Case: In one plant about half of the persons who are hired leave at the end of the first four or five days. What are some of the cost elements involved in this situation? What are some of the probable causes of it?

After considerable discussion of the subject, the following chart was developed.

Labor Turnover

<i>Section A—COST ELEMENTS</i>	<i>Section B—HOW TO OVERCOME</i>
1. Training new men. 2. Hiring. 3. Slowing up production. 4. Damage to tools and equipment. 5. Increased probability of accidents. 6. Increased scrap or second quality material. 7. Spoiled work.	1. More careful selection of help. 2. Better handling of green men while being broken in. 3. More information as to what the job is before the man is hired.

EXPLANATION OF CHART—SECTION A

1. *Training New Men*

When it becomes necessary to break in or train a new man on the job, the time of the foreman or the instructor must be taken into consideration and also it must be realized that while a man is learning, his production is generally below standard.

2. *Hiring*

When labor turnover prevails in a factory or industrial plant, the production is not only slowed up but the cost of hiring new men must also be considered.

This factor involves such items as cost of advertising, time spent in consulting with applicants, clerk's time for making and filing records and a number of others that could be mentioned.

3. *Slowing Up Production*

Every time old labor leaves and new labor is employed, production slows up until the new men are either trained or familiarized with the work.

4. *Damage to Tools and Equipment*

A new worker coming into a plant and not being familiar with the tools and equipment is far more liable to damage same than an old worker.

5. *Increased Probability of Accidents*

After the preceding items had been discussed, it was decided and cases were shown wherein that new labor was

more liable to accidents than old due to lack of knowledge of the plant and equipment.

6. Increased Scrap and Second Quality Material

During the training period, new labor often turns out a grade of work which, while not completely spoiled, is not up to the standard specifications. Such work often has to be disposed of as second quality goods.

7. Spoiled Work

There is also a likelihood of a new man spoiling considerable material until he becomes familiar with the work he is assigned to do.

EXPLANATION OF CHART—SECTION B

The first suggestion was offered by Mr. ——— and is applicable to the hiring of new men in a fertilizer plant.

1. More Careful Selection of Men

First, an applicant's past experience must be considered, and when possible, workmen should be secured who have formerly worked in the plant and whose records are satisfactory. The reason for this is that a man who has formerly worked in the plant is familiar with the equipment and trade terms and has a knowledge of the material used and where it is stored.

Mr. ——— also stated that an applicant's eyesight and hearing should be good, and any physical disabilities he might have should be carefully checked. Mental qualities should also be considered. Reading and writing are not necessary but the applicant should be able to speak English. He should also be able to weigh a wheel-barrow of material.

2. Better Handling of Green Men While Learning

It was decided that the turnover could be controlled to some extent by more careful handling of new men when first reporting to work. This could be done by giving close attention to the orders that are issued and seeing that they are understood.

3. More Information as to What Job Is Before Man Is Hired

It was thought that if a man was told plainly just what the job was and what would be expected from him, it would give him a chance to decide whether or not he would like the job before reporting for work.

ANOTHER EXCERPT FROM A CONFERENCE REPORT

b. RESPONSIBILITIES RELATIVE TO WRITTEN ORDERS

Case: The foreman of the car machine shop receives an order, issued from an outside point on the system, calling for one pair of 33" engine truck wheels mounted on 6½" axles, 54" between hub faces for XYZ Engine No. 5. No sketch was furnished with the order.

NOTE: The XYZ R.R. had recently been taken over by the ——— System and the foreman had no means of knowing whether or not some unusual standards were in use on its engines. He was in doubt as to what to do with the order—whether to fill it or return it for verification. The foreman knew that 6½" was not a standard axle. He also knew that 54" was 2" more than the standard distance between hubs.

Question: What is the responsibility of the foreman who receives this order?

Two possible procedures were analyzed as follows:

PROCEDURE No. 1

Fill Order as Received

ADVANTAGES	DISADVANTAGES
1. Time is saved if the order is correct.	1. Foreman sidesteps a responsibility. 2. Lack of cooperation. 3. Waste of labor and material if the order is incorrect. (a) Shop labor. (b) Stock. (c) Transportation. (d) Labor at outside points. 4. Possible holding of power out of service. 5. Possible delay on the job.

PROCEDURE No. 2

Hold for Verification

ADVANTAGES	DISADVANTAGES
1. Foreman uses his head and gives company advantage of his practical judgment. 2. Foreman cooperates with management. 3. Waste of material and labor is avoided. 4. Time is saved all around. 5. Job is completed sooner in case of error.	1. Slight delay in case order is incorrect. 2. Chance for foreman to bring criticism upon himself.

During the discussion the following question was raised: "Why should a foreman worry about such an order? Why not go ahead and fill it? If a mistake has been made the foreman has an air-tight alibi."

The majority of the foremen thought that a foreman was expected to use his head on the job, otherwise the company might just as well let clerks, who knew nothing of practical shop work, handle orders and assign work to the men.

The following suggestions were made by the group as to ways of avoiding this and similar difficulties:

1. The man who issued the order should have realized that the dimensions were unusual and have added to his order some statement such as "Figures have been checked and are O.K."
2. Sketch could well have been supplied with the order.
3. The original order may have been correct but a clerk in copying it might have introduced the error. Such things have happened before. More careful work by office clerks would save a lot of trouble in the shop.
4. A foreman who issues an order for something which is not standard could specifically check and sign the order.

PART III

THE APPLICATION OF THE CONFERENCE PROCEDURE TO WORK WITH VOCA- TIONAL SUPERVISORS AND TEACHERS

CHAPTER XII

SOME CHARACTERISTICS OF THE PROBLEM

Preliminary.—The purpose of this section is to point out some of the ways in which the Conference Procedure may be applied to certain lines of Professional Improvement work with experienced persons who are engaged in the work of teaching vocational subjects or of supervising work in the field of vocational education.

Much So-called Professional Improvement Work Non-Functioning.—Notwithstanding the fact that the actual work of vocational education is carried on in conformity with the principle that vocational training is likely to be of value in proportion as it is made specific and definite—this principle is often violated in the field of work where the very best type of teaching should be found—i.e., in the work of training vocational instructors.

This situation is intensified because of the increasing popularity of requiring of all public school teachers a specified number of hours of university credit every so often in order to qualify for increases in salary. In many cases it makes no difference whether or not the university work taken has any bearing upon the needs of the vocational teachers. It is enough to *get the credits*, regardless of the courses pursued. Because of this condition, vocational instructors and supervisors enroll in extension courses and summer sessions at teacher-training institutions in large numbers and pursue informational courses which have

little or no bearing upon the special problems which they have to meet and deal with in their work, day by day.

General courses are all right in their proper place, but when the principal objective is to build up the ability of a group of individuals along specific lines, it is a fallacy to assume that informational courses with general rather than specific objectives will function in any important way.

The Conference Procedure and Specific Professional Improvement.—Experience has clearly demonstrated the value of the conference procedure in dealing with experienced vocational teachers and supervisors for the purpose of securing improved procedure on the job.

Most trade and industrial teachers and supervisors possess plenty of skill as workers in their trades because of the standards which have been set up in all of the States relative to practical trade experience. Also, most of them have developed at least a passable degree of ability to teach what they know of their trades. Such being the case, the question naturally arises—what line of professional improvement work is apt to be of most value to them in helping them to become more efficient and valuable as teachers and supervisors of trade and industrial subjects?

The answer to the above question is best arrived at by making a critical examination of the points on which the need for improved procedure is clearly apparent.

Conditions which Indicate the Need for Conference Work.—In the experience of the writer, such facts as the following, if true in any given case, are of definite value in determining the nature and scope of conference work with employed trade and industrial teachers and supervisors.

1. The instructors have no clear appreciation of the difference between vocational education and general education.
2. The supervisors or heads of departments have no defi-

nite standards by which they can evaluate a given line of work from the standpoint of efficient vocational education.

3. The instructors have no basis for actually evaluating the advantages of doing practical production work as compared with exercises or practice jobs.

4. The supervisors have not been successful in making effective contacts with industry.

5. No one connected with the program has any definite basis for the identification and organization of related subject matter for the different trades taught.

6. The supervisors and teachers lack a clearly thought out philosophy of vocational education. This places them at a disadvantage in discussing the problems of vocational education with academic administrators.

7. Elaborate trade analyses which the instructors made as a part of their teacher training work have not been utilized.

8. The work of industrial arts is more or less confused with that of trade and industrial education because the administrators higher up classify all forms of shop work as vocational education.

9. The instructors and supervisors possess a great deal of valuable knowledge regarding their work which is *unorganized* and consequently of limited utility to them.

10. The supervisors and possibly the instructors have been carried away with the idea of substituting "job sheets" for personal instruction on the job by a qualified instructor. They have accepted this idea and applied it without having made an analytical study of the use and abuse of job sheets, the limitations of informational instruction in assisting a learner in acquiring ability in the performance of work, and similar questions.

It should be noted that any or all of these conditions as

well as others of a similar character may obtain with a group of trade and industrial teachers, all of whom are experienced mechanics or trade workers, who, in addition to their trade knowledge and skill, are able to teach what they know in such a manner as to "get by." In such a situation, the important question is, should professional improvement work be attempted which is definitely aimed at securing improved procedure on the jobs which the supervisors and teachers have, or should the emphasis be placed upon university credit in unrelated and non-functioning lines of work? If the answer to the above question is in favor of specific professional improvement work, the next question to be considered is, what conference objectives should be set up and how can they be put over?

Typical Characteristics of Trade Teachers.—Most vocational teachers, at least in the industrial field, have certain characteristics, some of which are of positive and some of negative value. A partial inventory of these characteristics together with a few comments regarding them may be of some value to supervisors in connection with the establishment of conference programs and the determination of conference objectives. The list which follows applies more particularly to experienced vocational teachers who have been carefully selected from actual industrial employment.

Assets.—1. *Practical Working Experience.* Under present standards, trade teachers are selected from industry and successful working experience is a fundamental requirement for approval. Practical working experience should make it easy for a shop teacher to retain his equilibrium under school conditions and not acquire a case of "Ingrowing pedagogy."

2. *Tendency to naturally practice a crude sort of pedagogy which is essentially correct.* A man who has served an

apprenticeship in a skilled trade and subsequently has functioned as an instructor of apprentices or as a foreman, usually picks up or acquires a certain amount of skill as a practical instructor on the job. The methods which he follows naturally, before being subjected to a teacher training course, are those that are used on practical jobs *because they work*. If this characteristic is properly evaluated by the person who gives him his initial teacher training work he probably handles his instructional work easily and naturally. If he has been spoiled by too much non-functioning teacher training he may try to become a "professor" and overwork shop lectures, job sheets, notebook work and other school procedures to a degree that tends to pull down his efficiency as a vocational teacher.

3. *The habit of getting tangible results.* Experience in industry tends to fix the habit of looking for and securing tangible results. This asset may be described as not knowing any better than to go ahead and do a good job.

4. *The habit of getting results that will stand inspection.* This asset is closely associated with the preceding. In practical industrial work the results secured must meet certain known standards.

An industrially trained man naturally tends to organize his school work in such a manner as to result in turning out boys who can meet the demands of a practical job. This is decidedly an asset of great value.

5. *Job Pride.* A man qualified to be a vocational teacher necessarily has this asset. He has certain standards of workmanship which he maintains himself and always endeavors to get his students to realize the importance of doing creditable work on practical jobs.

6. *Occupational Pride.* A vocational teacher should really believe in his trade. No man, however expert he may

be as a worker, can be a good vocational teacher if he is always apologizing to himself and to others for the fact that he learned his trade in the first place.

Liabilities.—1. *An Inferiority Complex.* A man selected from industry and placed in a teaching position very often has an exaggerated idea of the value of the *kind* of an education which he does not have himself. The man, for example, who has studied higher mathematics may appear to stand on a plane so much higher than the one on which he is located that he is at a disadvantage in discussing educational matters with him.

Another effect of the inferiority complex is a tendency on the part of the shop teacher to develop an attitude which permits him to be easily brushed aside by academic influences. He finds himself in a situation where *it is assumed* that he recognizes the superior educational values of academic subjects and admits the intrinsic inferiority of practical shop work when his thinking is all the other way around, but he keeps his opinions mostly to himself.

2. *Inability to express opinions.* A man who left the regular schools young enough to enter upon an apprenticeship in a skilled trade is seldom a high school graduate. In many cases he has not gone beyond the elementary school. This fact, together with the fact that trade work seldom offers opportunities for men to develop such latent abilities as they may have along the lines of public speaking, tends to make the vocational teacher more or less inarticulate when occasions arise where he needs to express his opinions on matters related to his job, clearly and forcefully. This condition is accentuated in proportion as the individual is rather "lame" in his grammar and has a limited vocabulary.

3. *No Landmarks to go by.*—A typical shop instructor

whose preparation for teaching has been limited to the ordinary variety of teacher training work can hardly be expected to possess a good practical working philosophy of vocational education. He generally has some ideas with respect to the importance and social value of vocational education, but these ideas are not tied together and organized in such a manner as to constitute a practical basis for intelligent constructive thinking.

4. *In danger of becoming academic.* A skilled workman, snatched as it were, out of industry and transplanted into an educational environment, often feels very much alone. Naturally he craves companionship and derives real satisfaction through association on an equal basis with other members of the faculty. To the extent that he feels that he is looked upon as somewhat "different" and either knows or imagines that he is "outside of the charmed circle" he will feel like an outsider. It is the most natural thing in the world for a man under such conditions to attempt to become like those with whom he is associated in his work. In the event that he is one of a small group of vocational teachers in a cosmopolitan high school he is in very real danger of abandoning his industrial viewpoint and practical ideals and becoming more or less academic. The degree to which he succumbs to the academic influences which surround him determines the degree to which he will fail to function in any important way as an exponent of bona-fide trade and industrial education in his school. This danger indicates the need for helping vocational teachers to have the courage of their convictions and stand squarely for the sound development of the kind of vocational education that will actually function.

Characteristics of Groups Suggest Objectives for Conference Work.—The preceding lists of typical assets and

liabilities of vocational instructors and supervisors is intended to be suggestive only. No claim is made that the items listed and discussed are either entirely correct or all-inclusive in any way; they are merely submitted for what they are worth as the result of a considerable amount of observation and actual working relationships with a large number of such teachers and supervisors. As such, they should be of value in suggesting some objectives for conference work.

CHAPTER XIII

CONFERENCE TOPICS AND OBJECTIVES FOR VOCATIONAL INSTRUCTORS AND SUPERVISORS

Preliminary.—This chapter contains suggestive material for conference work with experienced trade and industrial teachers and supervisors.

Many of the conference topics as, for example, "Analysis of Responsibilities of a Supervisor of Trade and Industrial Education" and "Cooperation" may be handled in the same general way as similar topics would be handled with a group of industrial foremen. For these topics together with "Leadership," "Interest," "Records and Reports," "Orders" and others which are suggested, Part II of this book contains a great deal in the way of usable conference material which has been found to function just as well with trade and industrial teachers and supervisors as it does with foremen and supervisors employed in industry.

A few samples of objectives follow, together with some detailed suggestions as to how to put them across with an average group of trade and industrial men.

Suggestive List of Conference Topics.—

1. Some standards by which a program of trade and industrial education may be evaluated.
2. Types of organization for putting over vocational education in the trades and industries.
3. Analysis of the responsibilities of a supervisor of vocational education.

4. School organization relationships—the identification of responsibilities in so far as the administration and supervision of vocational education is involved.

5. Special methods of instruction—their advantages and disadvantages for different types and classes of work.

6. The determination of objectives for different types of courses.

7. The utilization of occupational and trade analyses in specific ways.

8. The personnel management problem in a trade school.

9. Cooperation in the school organization.

10. Leadership.

11. Interest.

12. The identification of related subject matter for specific trades.

13. Records and reports.

14. Safety and accident prevention in the school shop.

15. The relationships between general education and vocational education.

16. Setting up cooperative relationships with industry.

17. The vocational teacher's responsibilities for:

a. Selection of students.

b. Training of students.

c. Placement of students in employment.

d. Following up students after placement.

18. The function of job sheets in a program of trade and industrial education of vocational grade.

19. The characteristics of efficient supervision in vocational education.

Possible Procedures.—For most of the above topics, straight conference methods can be used with any average group of experienced teachers or supervisors of trade and

industrial education. In proportion as the group members lack experience it will of course be necessary to break over more and more into developmental and informational teaching procedures.

SOME SAMPLES OF CONFERENCE OBJECTIVES

For the first suggested topic of the preceding list, a possible series of objectives would be as follows:

Major objective (indirect).

To get a group of vocational teachers and supervisors so that they will *want* to carry on their work in such a manner as to actually function as efficient vocational education.

Minor objectives.

1. To develop an appreciation of the fact that there are standards which can be identified by which the efficiency of a vocational program may be evaluated.

2. To secure a fairly complete set of standards—following the conference procedure and drawing upon the experience of the group.

3. To secure the acceptance of a rational set of standards for vocational education.

Suggestions as to Procedure.—In handling this topic with a number of different groups of vocational teachers and heads of departments, the author has found two types of material to be of definite value—1, Questions for discussion, and 2, Cases.

Suggestive List of Cases and Questions for Discussion.—

1. Does it make any difference whether or not a shop instructor is a master workman in his trade?

2. Is it important that vocational instructors should have

had practical working experience in the trades which they teach?

3. How much practical working experience should a shop teacher have had? A related subjects teacher?

4. Should a shop instructor know anything about the working condition in the shops and industrial plants in his city which employ men in the trade which he teaches? How much should he know about these places?

5. Is there any good reason why a shop instructor in a vocational school should be personally acquainted with shop superintendents and foremen?

6. What are the disadvantages of trying to run a school shop by doing practical production work?

7. What is a shop exercise? A practice job?

8. To what extent should a trade school shop confine its work to exercises? To practice jobs? Why?

9. A printing department in a certain trade school attempts to do all of the printing of forms, cards, etc., for the Board of Education. Because of the volume of this work, many of the boys in the shop spend a large portion of their time feeding job presses, printing cards and forms from electrotype plates. The pressure of work is such that boys work on these jobs long after the training value for them has been exhausted. Is this efficient vocational training?

10. A city supervisor of vocational education agrees to have 3000 folding chairs made in the carpentry department of the city trade school. The instructor is an experienced man and rigs up jigs and fixtures so that the job can be done by methods similar to those used in a furniture factory. The job lasts for five months during which time the instructor can do but little more than push the job along, meanwhile giving little or no attention to other lines of work. Does this illustrate efficient vocational education?

11. A trade school course in bricklaying is organized wholly on the basis of practice jobs. A kind of mortar is used which does not set. The practice jobs are knocked down after the instructor has checked them up and the bricks are used over and over until the corners are all rounded off. The mortar is also used over and over insofar as possible. To what extent can efficient vocational training for bricklayers be carried on by following this procedure? Why?

12. A trade school course in power machine sewing is in charge of an experienced woman who is thoroughly familiar with current trade practice. She keeps herself posted with respect to local conditions and employers are glad to employ girls and women whom she has trained. All of the work of the department is done on practical jobs sent in from the trade. The jobs are handled in just the same way as they would be handled in outside shops. A stranger stepping into this workroom would see nothing which would lead him to believe that he was in a school. Everybody is busy and the work is going through just as it would in a garment factory. What characteristics of efficient vocational education are indicated in the above description?

13. Would the fact that the instructor of the class described in question No. 12 had demonstrated her skill and standing in the trade, by having worked as forelady in a large garment factory, tend to insure efficiency in the work of the department?

14. Have you ever known a person who was an expert worker who was at the same time a poor instructor?

15. How important is it that trade school teachers should be efficient instructors?

16. What are some of the ways in which skilled trade workers can acquire ability in teaching?

17. A machine shop instructor in a trade school permits a number of boys to be around his shop (ostensibly working) dressed in golf suits. Others have their coats on with cuffs showing below their sleeves. A few of the boys wear sport sweaters. Does this practice tend to interfere with the value of the work? Why?

18. In a certain trade school a large percentage of the students come in late and many of them leave early. Does this procedure tend to pull down the efficiency of the training? Why?

19. A vocational department in a high school is filled up with boys who do not get along well in their academic studies. Only a small percentage of them are there because they are interested in learning a trade. An effort is made by the principal and his office assistants to build up the classes so as to keep down the per capita cost. In what ways does this tend to impair the efficiency of any vocational training that may be attempted? Why?

20. A boy who is interested in machine shop work and who intends to go to work in a railroad shop at the end of the term, is required by the principal to take high school English and algebra in order to be permitted to work in the machine shop the balance of the time. The boy can see no value *to him* in the algebra and the work in English consists in scanning poetry. The boy quits school and goes to work in the railroad shop. Does this case illustrate any circumstances that make it difficult to carry on efficient vocational education in a department of a high school?

21. A high school claims to have a vocational course in operation. The boys spend three hours per day in the shops and carry three or four regular high school subjects in the other half day. If there is anything the matter with such a line-up, what is it? Why?

22. A vocational department of a high school observes the policy of emphasizing "Educational values." The shop work is carried on by doing a series of exercises and practice jobs. No attempt is made to give repetitive experience on jobs. Is there anything in such a procedure that would make for inefficiency from the standpoint of vocational training? Why?

23. A certain trade school installed a tailoring department with the idea of uplifting and rehabilitating the trade. The administration of the school was opposed to the idea of training operators or specialists such as the local employers wished to hire. Did the administration of this school make a mistake? If so, what characteristic of efficient vocational education was involved?

24. An instructor in a certain trade school is an exceptionally fine workman. He is also a skilled instructor but he is continually running down his trade and telling his students that no man with any brains or ambition should think of learning it. In what way does this man fall down as a vocational teacher?

25. A vocational department of a high school attempts to enlarge the usefulness of its machine shop work by inaugurating a part time cooperative course. All of the boys in the shop who are able to make good on a job, under the week-about plan, are placed in shops by the instructor. Each boy is visited on the job by the instructor at least once during the week that he is out on the job. All of the shop foremen, under whom the boys work, are glad to see the instructor when he comes around. The boys get along well. They like their jobs and enjoy their alternate weeks in school. What characteristics of efficient vocational education does this case illustrate?

Probable Results.—A conference discussion of the

character which would be stimulated by a series of questions and cases for discussion similar to the preceding should result in the development of a series of standards or "evaluating factors" similar to those given in Prosser & Allen's "Vocational Education in a Democracy," or in Wright & Allen's "Supervision of Vocational Education."

A list secured by the author from a group of experienced vocational teachers and supervisors follows.

A program of trade and industrial education of vocational grade will be effective in proportion as:

1. The instructor is a master workman in the trade which he teaches.

2. Work is done on practical jobs—not on exercises or practice jobs.

3. The instructor can effectively teach what he knows and can do.

4. The shop work of the school is carried on under practical working conditions.

5. The learners are brought up to a point where they have sufficient knowledge and skill to meet employment standards.

6. The tools and equipment used are, as nearly as possible, the same as that used in local shops.

7. The material of instruction is derived from industry—not from theoretical sources.

8. There is a practical tie-up with industry and an efficient system of placement and follow up.

9. The training is given to selected groups of individuals who expect to use the knowledge and skill gained in earning a living.

10. Sufficient repetitive training is given to bring the learners up to a desirable level of "doing ability."

11. Sufficient related technical instruction is given for

each trade to insure that those trained shall be *intelligent* as well as *skilled* workers.

12. The related subjects work is specially adapted to the needs of *each trade* and is taught either by the shop instructor or by a man who has had practical working experience in the particular trade for which he is teaching related subjects.

13. The instructor and the learners have a wholesome attitude toward their work and a desirable amount of job pride.

14. The funds available are at least sufficient to make it possible to do a good job of training.

15. The work is so organized and conducted as to insure progressive experiences for each learner, avoiding exploitation on the one hand and too little repetitive experience on the other.

Comments on the Results.—In this case, as in the case of all other conference work, the actual results as written down on paper are of incidental value only. *The chief values lie in the thinking which is promoted.* Moreover, a set of efficiency factors equivalent to the preceding, is of far greater utility, in any given situation, if the members of a group know that they represent the results of their own thinking relative to the problem. They are far more likely to apply such a set of evaluating factors to their own work when they think them out themselves than they would be if they were handed down to them in ready-made form.

ANOTHER SAMPLE OF CONFERENCE OBJECTIVES

Reference.—Topic No. 18, page 194. *Job Sheets.*

Major Objective (indirect). To get group members so that they will adopt the job sheet plan only in cases where there is real justification for so doing.

Minor Objectives.

1. To secure a clear understanding of what a job sheet is.
2. To develop an appreciation of the different types or kinds of job sheets.
3. To secure an appreciation of the advantages and disadvantages of using job sheets.
4. To develop a clear appreciation of the utility of job sheets in trade teaching.

Suggestions as to Method of Handling Topic.—1. It is highly desirable to have samples of job sheets, operation sheets, and information sheets for the purpose of identifying the degree to which the author of the job sheet has included data relative to (1) What the job is, (2) How it should be done, (3) The mathematics, science and drawing involved (if any), (4) Trade terms, (5) Other auxiliary information including tools and equipment needed, safety precautions, and other data.

2. The writer has found that a pro and con analysis is a desirable conference device to use for bringing out the advantages and disadvantages of job sheets. It would naturally follow that a great deal of discussion would be involved in developing such an analysis.

Example of Actual Blackboard Work.—Types of Job Sheets:

The three following types of sheets in varying combinations are commonly known as job sheets:

- a. *A job sheet:* Tells what to do. (Plans and specifications.)
- b. *Operation sheet:* Tells how to perform operations involved in doing.

c. Information sheet: Gives auxiliary information such as rules, scientific information, mathematics, materials, safety rules.

Job Sheets

POINTS IN FAVOR	OBJECTIONS
1. A time saver for giving out information.	1. The boys will not take the time to read them over. (Fault of instructor.)
2. A training device—to develop ability to use printed material.	2. They get out of date, as in the case of auto mechanics. Constant revision necessary.
3. Each boy gets some information.	3. Get soiled and illegible on certain lines of work better for electrical trade than for auto mechanics.
4. Tends to standardize instruction.	4. Instructor may stop teaching on the job and become clerk only.
5. Makes smoother running organization.	5. Tends to standardize instruction and cut down on individual instruction.
6. May tend to reduce accidents or spoiled work.	6. Discourages original thinking.
7. Good effect on instructor even if job sheets are not used afterwards.	7. Possession of information does not necessarily affect procedure on the job.
8. Promotes individual progression.	8. To have it all figured out in advance tends to reduce development of resourcefulness on the job.
9. Enables teacher to handle larger groups.	9. Uses learner's time unprofitably.

NOTE: Because of the fact that some members of the group thought it to be desirable to standardize instruction while others were opposed to standardization, the item appears in both columns.

Summary of Discussion on Job Sheets.—1. Job sheets are of maximum value with beginners and for operations new to the learners.

2. Job sheets of maximum value where skill (M) is low and technical knowledge (T) is high.

3. For jobs involving high manipulative skill, job sheets will never be an acceptable substitute for a competent instructor on the job.

4. Job sheets are of less value where the shop work consists of production jobs than where exercises or practice jobs are used.

5. The value and utility of job sheets decreases as the apprentices advance in their training.

6. A good supervisor will not impose his ideas arbitrarily on a group of teachers. He will encourage original thinking on the part of each individual teacher. The man who believes in job sheets should not be forced to junk them. The man who can't see the value of them should not be forced to use them. Both should be judged by the *results* secured.

7. Job sheets have their use. They can never, however, be a substitute for a competent teacher.

8. A classified analysis of a trade gives the material from which to build up job sheets.

EXAMPLE OF RESULTS SECURED IN A CONFERENCE OF TRADE AND INDUSTRIAL SUPERVISORS

Topic: *Standards in Supervision.*

Efficient supervision in the field of trade and industrial education may be expected in proportion as:

1. The supervisor has a working command of the special methods used in teaching shop and related subjects. Evidence of this would include:

- a.* Successful experience as a teacher of trade and industrial subjects in an approved school of vocational grade.
 - b.* Ability to demonstrate on the job not only the mechanics of teaching but the practice of the art of teaching as well.
2. The supervisor knows the job which he is responsible for supervising from the standpoint of first-hand participating experience.
3. The supervisor uses good teaching procedure with the teachers under his supervision.
4. The supervisor uses good methods of personnel management in dealing with those under his supervision.
5. The supervisor possesses the qualities of real leadership as contrasted with over-emphasis upon his authority. Evidence of possession of these qualities would include:
- a.* That he is regarded as a "square shooter" by those under his supervision.
 - b.* That he is able to gain the confidence of those under his supervision with respect to:
 - (1) His personality.
 - (2) His knowledge of the work.
 - c.* That those under his supervision will present their real difficulties to him and not attempt to cover them up for fear of criticism.
 - d.* Ability to put himself in the other fellow's place and appreciate his difficulties.
 - e.* That he does not require others to meet standards which he cannot or does not meet himself.
 - f.* His willingness to accept his share of the responsibility when something goes wrong.
 - g.* Fairness in giving credit, not expecting those under

his supervision to shine, like the moon, by reflected light.

h. Ability to prevent personal likes and dislikes from interfering with business matters.

6. The supervisor delegates responsibilities that should be delegated and avoids meddling with the jobs of those under his supervision. He gives a man a chance to use his head on his job and looks for results.

7. The supervisor does original thinking and creative work instead of working as a "retail dealer" in other men's ideas.

8. The supervisor inspires those under his supervision to use their heads. He tries to encourage resourcefulness on the job and is not interested in attempts to standardize the human mind.

9. The supervisor does not throw up a line of defense by devising a lot of intricate reporting forms and requiring those under him to do a lot of non-functioning paper work.

10. The supervisor is not afraid to go out on the job and discuss matters first hand. He is competent, therefore he is not in danger of exposing his ignorance while close to the job.

11. The supervisor helps those under him to do a better job.

12. The supervisor has an adequate conception of vocational education and for the need of a close tie-up with industry. He is not afraid to tie up with industry.

13. The supervisor is not afraid to take a neutral stand as between organized labor and open shop groups.

14. The supervisor does not advance himself by stepping on the heads of his associates.

15. The supervisor does not over-emphasize the mechanics

of supervision. He practices the art of supervision with due regard to the human element.

16. The supervisor has the courage of his convictions. He will follow up a proposition to make sure that results are secured. He will not have a lot of half-developed propositions floating around loose.

17. The supervisor does not utilize too much time with trivial details. He has some idea of relative values and can discriminate between things which are really important and things which are relatively unimportant.

18. The supervisor spends enough time in each class visited to secure adequate information relative to the work.

19. The supervisor trains an understudy so that his work may go on efficiently in his absence. Instead of trying to be an individual star performer, he develops an organization.

DEVELOPMENTAL TEACHING AND CONFERENCE WORK COMPARED

The chart which follows is included here partly to serve as an illustration of some results of conference work and partly because of its possible value for reference purposes.

The chart is self-explanatory. It contains data which could easily be expanded into an entire chapter, but the writer has attempted to give information in expanded form in this book only in cases where a detailed discussion seemed to have a tangible value for the reader.

SAMPLE OF CONFERENCE MATERIAL

Topic. The Objectives of Senior High School Shop Courses.

It frequently happens that supervisors of trade and in-

CHART DEVELOPED IN A CONFERENCE OF VOCATIONAL INSTRUCTORS, SUPERVISORS AND MEN FROM INDUSTRY
Comparison of the Developmental Lesson and the Conference Procedure.

	DEVELOPMENTAL LESSON	CONFERENCE
Purpose.	To teach a man something which he does not know.	To help a man to think out a problem drawn from his experience.
Person in Charge.	An instructor or teacher.	A leader of discussion, a teacher who can do this special type of teaching.
Procedure.	The recognized instructional process following the steps: 1. Preparation (Getting ready.) 2. Presentation (Putting over.) 3. Application (try out). 4. Test (Check up) and sometimes, 5. Generalization.	The conference procedure: 1. Assembling facts. a. First-hand experience. b. Second-hand experience. 2. Selection of functioning facts. 3. Evaluation of functioning facts. 4. Making a decision.
Methods.	1. Suggestive question. 2. Demonstration. 3. Illustration. 4. Experimentation.	1. Cases, various types. 2. Analysis. 3. Discussion. 4. Evaluation of data. 5. Questions, various Types. 6. Majority opinion. (Eight other devices as previously listed)
Results.	Members of class have definitely added to their knowledge or skill or both with respect to a job requiring active thinking, in advance of what they knew or could do before.	Members of conference group have carried on constructive thinking with respect to problems and situations with which they are already familiar. Nothing has been added. What they knew has been better organized.
Points of Similarity.	Past experience and knowledge or skill already possessed is used as a basis on which to build up additional knowledge and skill and active thinking.	Past experience is utilized. This experience is analyzed and organized in order that it may be of maximum utility in dealing with new problems.
Points of Essential Difference.	1. Instructor follows an organized plan. 2. Instructor actively teaches. 3. Class recognizes relationship of instructor and learner.	1. Leader has a general plan which is 100% flexible and is adapted to whatever way discussion may work out. 2. Leader guides discussion. 3. Relationship not set up and not implied.

dustrial education of vocational grade are made responsible for the supervision of high school manual arts or mechanic arts work.

In many sections of the United States there is considerable confusion of thinking with respect to the objectives of shop courses in the senior high school. This confusion has been intensified during the past decade by two situations which have developed—(1) The increasing attention which is being accorded to shopwork with definite vocational objectives for pupils of high school age, and (2) The growth and development of the junior high school with its exploratory or “finding” courses.

The following questions for discussion are samples of the type of questions which have been found to be of value in conference work with groups of individuals who carry joint responsibilities for vocational and non-vocational shop courses enrolling pupils of high school age.

QUESTIONS FOR DISCUSSION

1. Should the exploratory or try-out objectives of junior high school industrial arts work carry over into the senior high school shopwork? Why?
2. To what extent can the establishment and operation of shop departments in senior high schools be justified for the purpose of teaching boys the “social value” of the work?
3. If one of the principal objectives of senior high school shopwork is to secure recognition of the work for college entrance credit, how is the efficiency of the work affected?
4. At a recent meeting of this group, someone suggested pre-vocational training as a desirable objective for

- senior high school industrial arts. What is pre-vocational training?
5. If low per capita cost of instruction is one of the standards which is strongly emphasized, how is the work of senior high school shops likely to be affected?
 6. Why is "home mechanics" a desirable industrial arts objective for senior high school shopwork?
 7. What is the difference between the objective called "home mechanics" and the one on the tentative list called "tool manipulation"?
 8. In what ways can a shop instructor give any training in citizenship?
 9. How is the efficiency of industrial arts work affected by using the shops as convenient places for taking care of boys who do not get along well in their academic studies?
 10. In what ways can shop experience help to develop specific habits of doing and of thinking?
 11. A certain high school disclaims any intention of training boys for entrance into trade work. It claims to be engaged in preparing boys in its shops for something "higher." For what types of higher positions in industry can an industrial arts course prepare boys?
 12. Is the worthy use of leisure time a legitimate objective for mechanic arts work in the senior high school?
 13. What are some of the standards by which the actual value of senior high school industrial arts work may be evaluated?
 14. What, in your opinion, is the most desirable relationship which could exist between industrial arts and trade and industrial education of the vocational type?

CHAPTER XIV

THE ELEMENTS INVOLVED IN A COMPLETE TRAINING PROGRAM

Preliminary.—The formula $E = M + T + I + J + Mo$ is probably familiar to most persons who will use this book. For the convenience of those who are not familiar with it the following explanation is included.

The formula, commonly known as Richards' Formula, was developed in its original form by Charles R. Richards and Charles R. Allen. During recent years it has been added to and interpreted by Prosser and Allen in their book, "Vocational Education in a Democracy." The formula is a non-mathematical statement of the fact that efficiency on a job is dependent upon five distinct types of abilities as follows: manipulative skill, directly functioning trade-technical knowledge, job intelligence, job judgment, and job and occupational morale. In the formula,

E represents efficiency on the job.

M represents manipulative skill.

T represents trade-technical content.

I represents job intelligence.

J represents job judgment.

Mo represents job and occupational morale.

The elements "J" and "Mo" and to some extent "I" constitute what has been termed the "GV" (general vocational) content.

It has been recognized for a long time that the possession of manipulative skill plus the minimum amount of directly related technical knowledge required to do a job was not all that should be included in a complete trade and industrial training program if the objective of the training was to turn out intelligent, resourceful mechanics who could use their heads to a maximum degree on the job.

In a large number of cases the inclusion of miscellaneous general educational subjects has been due to a recognition of the fact that the possession of "M" and "T" for any given job was not all that was desirable. Due to a somewhat hazy recognition of this fact, vocational courses have been weighted down with almost every type of non-functioning subject, ranging from perfectly abstract mathematics on the one hand to art and music appreciation on the other.

Because of the remarkable possibilities for profitable conference work on this general topic as well as the equally great possibilities for detailed analysis, discussion and curriculum building which can be carried on by the conference procedure for each separate trade, each element which goes to make up the sum total of job efficiency is discussed in considerable detail in the following paragraphs.

THE "M" ELEMENT

The "M" value for any given job involving manipulative skill means the degree of manipulative skill which a person must have in order to be accepted as a reasonably skilled worker.

Generally speaking, there are three principal ways of setting up training courses for putting over the training indicated by "M" in the formula, as follows:

1. By Exercises.
2. By Practice Jobs.
3. By Practical Productive Work.

It is, of course, obvious that there are various combinations which may be made on the basis of the preceding, such as—exercises and practice jobs, practice jobs and practical production work, practical production work and exercises, or a combination which includes all three, i.e., exercises, practice jobs and practical production work.

Organization of the Training under Each of the Above Procedures.—Courses set up on the basis of exercises alone are necessarily formal and stereotyped. Such courses have no legitimate place in a program of trade and industrial education of vocational grade.

A combination of exercises and practice jobs indicates some degree of progression as compared with courses made up of exercises alone. One reason for modifying an exercise course through the introduction of practice jobs is to secure a greater degree of interest in the shopwork than is ordinarily possible with formal, abstract exercises. The success of such a combination course depends upon the degree to which interest is secured and also the degree to which the work is adapted to the age and experience of the members of the class.

While a shop course consisting of exercises and practice jobs might be a questionable proposition as a pre-employment day trade shop course, there are cases where it would be a first class set-up for certain types of trade extension work. Where the chief needs of the learners are in the field of technical content rather than manipulative skill, exercises and practice jobs may serve a really useful purpose. It should be noted, however, that the real objective referred

to above has to do with "T" in the formula rather than with "M." Stating that an exercise or a practice job is often an effective means of putting over technical content is not the same as stating that the procedure is endorsed for developing manipulative skill.

A course made up entirely of practice jobs is quite likely to be more or less formal and stereotyped. Very often such courses resemble in many respects the strictly manual training type made up entirely of exercises.

A good illustration of a shop course constructed on the practice job plan is found in the case of a certain bricklaying course where the practice jobs in bricklaying are constructed inside of the shop without any idea of utilizing the jobs after they are completed. Corners, walls, chimneys, fireplaces and arches are built up strictly as practice jobs and torn down, after having been inspected and approved by the instructor, in order that the material may be used over again.

Vocational courses based upon practice jobs can be justified where the working conditions are such that it is impossible to carry on practical productive work. Certain trade courses for the building trades which are conducted during the winter months in some of the northern states, are good examples of instances where it is justifiable to use practice jobs in trade training.

It seems improbable that a really efficient shop instructor would ever select practice jobs for putting over his "M" content in preference to actual productive work where practical productive work was available and the conditions were such that it was possible to do it.

When a shop course is built around the idea of doing practical productive work, there is no stereotyped course. Such a course is likely to be successful in proportion as the

instructor utilizes available practical jobs with due regard to the progress of the members of his class. In other words, a course conducted according to this plan could be carried on successfully where the instructor was able to so manage his shop that the individual members of the class could secure progressive training while working on real jobs of tangible value. It is, of course, characteristic of all such courses that the product is of value and is utilized in just the same way that any similar product made in an outside commercial shop would be utilized. While it is necessary in trade training to give the learner sufficient repetitive experience on type jobs to enable him to develop a marketable degree of skill, it is highly important to safeguard the learner from exploitation such as results from keeping him on repetitive work long after the training values have been realized.

In industrial arts and manual training work as phases of general education, the objectives have to do more with developing a series of appreciations of how things can be done than with the development of marketable skill in any special line of work. In a trade or industrial course of vocational grade it is necessary to carry the apprentice or learner up to a point where he has acquired a sufficient degree of skill in the performance of work to enable him to hold his place in industrial employment. A vocational school which is satisfied with the securing of a series of appreciations is, therefore, not entitled to be called a vocational school.

While it is important to emphasize the "M" factor or element up to the point where the necessary minimum degree of skill has been secured, it is an important responsibility of instructors and supervisors alike to see to it that learners are not kept at work on jobs, on which they have already developed the necessary degree of skill, unless they

are paid for turning out production work in just the same way that they would be paid if they were in actual employment.

From a theoretical standpoint, better vocational training will be secured when the shop work is entirely confined to practical productive work than when the practical work is diluted by a mixture of exercises and practice jobs or other imitations of the real thing. Under actual working conditions, however, it is often necessary to introduce a few practice jobs into the course in order to carry out the idea of giving the learners reasonably complete and progressive shop instruction.

A shop instructor who organizes and conducts his training course on the basis of practical productive work has many difficult managerial problems to handle. Under that plan an instructor has a large amount of planning to do which an instructor who carries his work through on a basis of practice jobs and exercises never has to bother with. An instructor who runs a practical shop course in a trade school has a job which is comparable to that of a foreman in industry. The instructor who runs his course on the basis of exercises or practice jobs, corresponds in many respects to an operator of a semi-automatic machine where everything is standardized, all of the necessary thinking has been done in advance, a full set of jigs and fixtures is available for mass production and there is nothing much for the machine tender to do but to keep the bearings oiled, feed the stock in at one end of the machine and watch for it to come through at the other end. Supervisors of trade and vocational education might well suggest to such teachers that they be prepared to defend their position when they make claim that formal exercises or practice jobs have "superior educational values" for their

pupils in comparison with the work of a practical trade school where real work is carried on.

The "T" Element.—There are four general procedures¹ which may be followed in handling the "T" instruction. A fifth method which consists of pseudo-handling in regular high school classes should not properly be classified as a method of putting over instruction on the "T" element. Under this pseudo-procedure, pupils are enrolled in regular high school classes. There is no tie-up with the shopwork and it is often incorrectly assumed that passing grades in algebra, geometry, physics and other high school subjects constitute sufficient evidence that the boys have secured that portion of their training which would be classified under the head of "related subjects." This pseudo-procedure is of no value as part of the vocational program for the reason that the learner does not get the real thing. If the "T" content is to be put over at all under such a plan, it becomes necessary for the shop instructor to take care of it informally on the job.

In the majority of cases where shop instructors give the related trade-technical instruction informally and as a part of the shopwork, they do not fully realize that they are giving instruction in the technical aspects of their trades. To the average shop instructor such instruction is merely incidental—just a part of the job of getting a learner to a point where he can do a job correctly and intelligently. One of the most important objectives of teacher training courses for shop instructors should be to develop the ability to identify the trade-technical content involved in a job. Another objective closely associated with the preceding would be to develop ability to put over the "T" material thoroughly and completely on the job and as a

¹ See Chart on page 224.

part of the practical work. The right sort of teacher training work conducted by common-sense methods should materially improve the efficiency of this general procedure.

Organized courses in related subjects taught by a related subjects teacher are likely to function efficiently in proportion as the work is flexible. In other words the work in related subjects should be "in phase" with the shopwork at all times as contrasted with the situation where a more or less stereotyped course of study controls the procedure.

First-hand working experience in the trade or occupation for which he is attempting to teach related subjects would seem to be an essential qualification for a related subjects teacher. Moreover, a practical viewpoint such as is acquired through actual participating experience in industry is a real asset for a related subjects teacher and tends to make it easier for him to coordinate his work with the shopwork. Where the related subjects teacher fails to synchronize his work with the shopwork and the shop experiences of the boys, the shop instructor necessarily continues to put over the "T" stuff informally on the job as discussed previously in this chapter.

Intentional handling of the trade-technical instruction either in the shop or in a classroom adjacent to the shop by the shop instructor sets up a situation where the shopwork and the trade-technical "related" instruction can be most readily coordinated and synchronized. Under this plan the shop instructor can give attention to the technical instruction necessary on any given job at the time when such instruction is needed. For maximum efficiency he should be free to choose his own time and to devote the necessary amount of time to handling "T" instruction. A suitable classroom adjacent to the shop fitted up with

tables, chairs and blackboard is desirable but not essential, as a competent and resourceful instructor can ordinarily devise ways of handling groups of boys right in his shop when he desires to put over a technical lesson. Any plan for having the shop instructor handle the trade-technical instruction may be expected to succeed in proportion as the shop instructor has his material in shape for effective instructional use and knows how and when to put it over in such a way that it will mean something.

The "I" Element.—Job intelligence, while somewhat hard to define, is easily recognized. It is that something which an old and experienced worker possesses which a graduate apprentice or comparatively inexperienced man cannot be expected to possess. It has to do with the kind of ability that makes a man dependable, reliable, and worthy of confidence in handling difficult or unusual jobs under conditions where he is called upon to figure things out for himself to a considerable extent.

One thing which tends to develop the "I" value for a given occupation is excess technical knowledge. This excess "T" it should be understood, includes additional knowledge along the line of mathematics, science, drawing and technical and auxiliary information which is beyond and in addition to that which a man must have in order to do a job. It also includes "tricks" of the trade, shop "kinks" and many other items of a similar character.

The principal danger in translating this idea of excess "T" into practice has to do with an almost universal tendency to over-emphasize general principles and the kind of technical information which the members of any given group *may* need twenty years hence and to ignore many of the immediate and obvious things which are of direct, tangible value.

One definite means of dealing with this phase of a training program is to carry the instruction on the "T" content through Step 5 of the teaching procedure. Step 5 (generalization) is not ordinarily included in the instructional procedure in the field of trade and industrial education. The generalization can be most effectively put over after the learners have had a considerable amount of specific, concrete instruction and practice in handling specific problems directly connected with the work in which they are engaged.

In most conventional courses in mathematics the attempt is made to teach general principles first and then follow up with specific applications of the principles. In the light of modern educational psychology, a procedure which calls for a whole lot of specific and concrete experiences first, to be followed later by a generalization step where the fundamental principles are brought out and appreciated, in such a way that no effort of memory is necessary in order to understand them, is much more nearly correct. The first procedure calls for memorizing, the second calls for thinking.

The "J" Element.—Job judgment is acquired through experience based upon a thorough knowledge of the job. Some of the objectives which might be included under this element would include initiative in planning work, resourcefulness on the job, mechanical ingenuity and inventiveness.

Initiative in planning work needs but little explanation as it is merely another way of saying that a man can use his head in taking the next step on a job without running around to find someone else to make a decision for him. Such an ability is a valuable asset to a skilled worker in any line of activity.

Resourcefulness on the job includes such things as ability to figure out ways and means of accomplishing a desired result where the conditions are difficult or unusual, or where the tools and materials at hand are not exactly the same as the tools and materials which would be used under ideal conditions.

Mechanical ingenuity means ability to adapt common and well-known mechanical devices, tools or methods of doing work to special or unusual jobs in order to secure a desired result more easily than it would be secured by a man who failed to use his head on the job.

It is somewhat difficult to draw a sharp line of demarcation between resourcefulness on the job and mechanical ingenuity. To illustrate the difference, if there be any real difference, it may be pointed out that a man might be very ingenious where he had all sorts of first-class equipment at his disposal and, under these favorable conditions, he might be able to develop superior methods of doing a job. The same man, however, might be very much lacking in ability to get things done under difficult and unfavorable conditions where it was necessary to get along with partial or incomplete equipment and poor facilities for doing the work.

Inventiveness may be considered as the ability to develop new ways of accomplishing something by means of tools, machines or methods entirely new to the trade, as contrasted with ingenuity, which was discussed from the standpoint of ability to make new combinations and adaptations of well-known tools, machines or methods.

It would seem to be quite obvious that the type or types of job judgment which should be considered in any particular case should be emphasized in accordance with the requirements of the job for which an individual is being trained.

Where training is being conducted for the purpose of preparing young men to qualify as machinists or toolmakers in an automobile factory in Detroit, the emphasis would necessarily be different than it should be in a training course for machinist apprentices in a railroad shop in California. Again, both of these cases present job demands quite different from those which are found in the problem of training machinists for efficient work in the type of machine shops operated on Hawaiian sugar plantations.

So far as the writer is aware of the facts, very little serious thought has been given to this phase of a complete training program, especially in the public trade and industrial schools of the country. In the last analysis, however, the fact that job judgment results from experience, following training, limits the possibility of accomplishing very much along that line in any pre-employment course. For all forms of trade extension work the possibilities are probably greater.

The "Mo" Element.—As previously stated the "Mo" element in Richards' formula is intended to represent that portion of the complete equipment for satisfactory and efficient work which has to do with a person's attitude toward his work. It includes such things as occupational pride, job pride and ability to get along with people.

At the present time it is an open question as to how far any subject or body of teaching content can function in the development of desirable attitudes toward work and the responsibilities that go with a job. While this "Mo" factor is a difficult one to deal with in connection with any given course, those things which are indicated by it are of very great importance inasmuch as they affect, in fundamental ways, the success of an individual on his job.

A subject which can be included in a course of instruc-

ion for the purpose of building up occupational morale is illustrated in certain courses for apprentice plumbers where some attention is given to the public service aspects of the plumbing industry. The relationship which exists between honest work by plumbers and the public health is a topic which has been found to be of value in getting plumbers and plumbers' apprentices to appreciate the fact that they are engaged in a necessary trade which is of great value to the people as a whole.

For bricklayers it has been found to be of value to include in apprentice courses some instruction concerning the history of the trade, its antiquity and its fundamental importance, for the purpose of stimulating job and occupational pride.

Unless considerable care is exercised, vocational programs are likely to become cluttered up with all sorts of general education subjects because of the belief that any or all of the subjects included will, in some sort of an intangible way, contribute to the putting over of the "Mo" element in the program. This tendency should be resisted by all State and local supervisors in order to avoid running into situations where the major emphasis in trade school courses is transferred from the strictly vocational training as represented by "M" and "T" in the formula and placed upon "I," "J" and "Mo." This is just another case of the tail wagging the dog.

The chart which follows was developed in a series of conferences with groups of trade and industrial supervisors and instructors.

CHART INDICATING A PARTIAL DEVELOPMENT OF THE VARIOUS FACTORS WHICH ARE INVOLVED IN A COMPLETE TRAINING PROGRAM

(The following chart is an expansion of Richards' formula in the form in which it is now generally referred to, i.e., $E = M + T + I + J + M_o$)

FACTOR	OBJECTIVE	GENERAL PROCEDURE	ORGANIZATION OF INSTRUCTION	SUCCESS FACTORS, SUCH AS
M (Manipulative Skill).	The necessary degree of manipulative skill on the job.	1. Exercises alone.	Formal course (stereotyped).	None listed. (No place in a vocational program.)
		2. Practice jobs.	More or less formal. Product not used. Practice jobs arranged in effective instructional order.	Interest of the learner. Adaptation to age and experience of learners.
		3. Practical production work.	No stereotyped course. Instructor utilizes available practical jobs with regard to progress of learners. Product used.	Degree to which instructor is able to manage his shop so that learners get progressive training. Degree to which exploitation is avoided, but satisfactory trade standards are reached.
		4. Practice jobs and production work.	Production work where possible, supplemented by practice jobs to give progressive training.	The ability of the instructor to manage his shop in such a way as to utilize productive work to the greatest possible extent.
T (Related Technical Content).	A working command of the trade technical content of the trade including such empirical and rule of thumb methods as are used on the job by expert workers.	1. Informal handling on the job by shop instructor.	Shop instructor ordinarily does not know that he is putting over "T" content. To him it is just as incidental part of the job.	Degree to which shop teacher knows his stuff (The right kind of teacher-training needed here). Size of group.
		2. Organized course by related subjects teacher.	More or less formal course. (Shop instructor probably continues to put over "T" on the job, informally).	Degree to which classroom instruction is synchronized with shop experience of learners. Qualification of teacher (Shop experience). Degree to which related subject matter is made specific for each trade.
		3. Intentional handling by shop instructor in the shop.	"T" instruction would be given on the job when and where needed -- individually or to groups. Shop teacher responsible.	Degree to which the shop instructor has his material identified and organized and knows how to put it over.

I (Job intelligence).	4. By shop instructor in classroom or outside of shop. 5. Pseudo handling in regular high school classes.	Shop instructor chooses his own time to put over "T" when necessary. Suitable classroom near shop provides advantageous working conditions. Learners enrolled in high school classes—no tie-up with shop work: Algebra, geometry, physics, etc.	Degree to which shop instructor has his material identified and organized and knows how to put it over. Degree to which suitable time arrangements are made.
I (Job intelligence).	To secure excess "T". Technical knowledge which has a functioning value for the trade in excess of that which a man must have on the job.	Carry instruction on "T" through Step 5—Generalization—by organized courses in mathematics, science, drawing, art (for some trades). Tricks of the trade, shop kinks. Additional technical information: auxiliary information. A sample of text material specifically intended to meet this need may be found in Cushman's <i>Mathematics and the Machinist's Job</i>—Wiley, 1926.	Degree to which the "organization course" is actually based upon the specific "T" content. Degree to which instructor has background of practical experience.
J (Job Judgment).	To develop initiative in planning work. Resourcefulness on the job. Mechanical ingenuity (inventiveness).	This results for the most part from skill and experience on the job.	Degree to which man is adequately trained to start with. Degree to which he gets suitable experience.
Mo (Job Morale).	To develop ability to get along with: - Associates. - Superiors. - Subordinates. - The public. To develop job pride. To develop occupational pride. To develop desirable attitude toward the job and its responsibilities.	This results from such things as good shop discipline and intelligent personnel management by the instructor and foreman. For some trades, job and occupational pride may be developed or encouraged by definite instruction as for example: History of the trade for bricklaying class, and Public Service value of the plumbing industry for apprentice plumbers. Other suggestions: Bring best examples of fine or important work in the different trades to the attention of the learners.	Degree to which the instructors have some vision and can teach in terms of objectives rather than subject matter. Attitude of instructors toward their chosen trades.

DISCUSSION OF CHART

Preliminary.—The chart on page 224 portrays a summary of conference discussion carried on with the idea of stimulating some constructive thinking on the problem indicated.

Manipulative Skill (M).—It may be noted that four general procedures are listed for training in manipulative skill. Three of these procedures were regarded as having desirable characteristics; numbers 3 and 4 being placed first in the order of desirability. Number 1, attempting to give vocational training in manipulative skill through exercises alone, was not endorsed by the group.

The nature of the discussion which was carried on is indicated, to a considerable extent, by the "success factors" which are listed.

Related Technical Content (T).—Five possible procedures were considered for handling the instruction in the directly related trade technical content. The discussion of this phase served to bring out very clearly a realization of the fact that procedure number 1 is the one which is actually being followed in most cases, together with a rather discouraging combination of 2 and 5.

In perhaps the majority of cases, existing analyses of trade content have not been utilized to any great extent for the purpose of getting a good job of teaching done in the field of related subjects. For example, it is not at all uncommon to find schools in which carpenters, machinists, printers, electricians, sheet metal workers and others are brought together in so-called related subject classes. Existing trade analyses clearly show that the machinist uses mathematics in his work in a manner entirely different from the printer. Different units, different standards of

accuracy, different materials, in fact differences all the way through make it desirable to have the mathematics of the machine shop taught by a man who has had real machine shop experience and the mathematics of the print shop taught by a man who has had actual practical experience as a printer.

In view of the fact that each trade or occupation has developed special ways of determining and comparing magnitudes specifically adapted to the practical demands of the occupation as actually carried on, the futility of setting up an organization where one man attempts to teach the trade-technical mathematics for a half dozen trades should be perfectly clear. Such a plan results in nothing more than a general class in mathematics in which there is more or less of an attempt made to utilize certain shop problems for the purpose of building up the ability of the learners in the general field of mathematics. Such a general aim, while entirely worthy under the proper circumstances, is not the same thing as developing the ability of learners to solve shop problems by the short cut and empirical methods used in specific ways by each trade.

The chart indicates quite clearly that suggestions for having the shop instructor give the directly related trade technical instruction stimulated considerable thinking. (General procedures 3 and 4 for "T.")

Job Intelligence (I).—The trade technical content ("T" stuff) usually consists for each trade of more or less unrelated, specific, isolated examples of applications of science, drawing and mathematics together with certain special technical information. After a learner has acquired a working command of the trade technical content for a given job or group of jobs he has all that he *has* to have in the way of technical information in order to

do his work. As previously stated, this technical knowledge is very concrete and specific.

To organize the specific and unorganized technical knowledge of the trade as learned on the job and to secure an understanding of the underlying principles which lie behind the specific applications of mathematics, science and drawing to the work, gives the learner an asset of tangible value as an intelligent as well as a skillful worker in his trade.

As indicated on the chart, one way of accomplishing the objectives indicated under "I" is to carry the instruction on related technical subjects through step 5—Generalization. This can be done by giving suitable organized courses in mathematics, science, drawing and, for certain trades, art. Such "organization courses" are, of course, of maximum value to learners who have had a wide range of shop experience and have acquired a working command of the trade technical content as used in the shop.

Additional technical information, which can be shown to have a functioning value, is also another factor in building up the "Job Intelligence" element.

Job Judgment (J).—If, as indicated on the chart, "Job Judgment" results from skill plus experience, there would appear to be a limited opportunity to provide any direct means of dealing with this element on a pre-employment basis other than to do the best possible job of training. Anything that could be done to provide for a variety of experiences, superimposed upon through fundamental training, would seem to contribute to the development of job judgment, which, in turn, would result in increased resourcefulness on the job.

Job Morale (Mo).—It is clearly apparent that a person's "attitude" toward his job has a very definite bearing

upon his value as a worker, somewhat, if not quite independent of his skill and the amount of functioning technical knowledge which he possesses. To illustrate, a trade school in the business of training locksmiths will fail of its purpose as a public service agency, regardless of the amount of skill and technical knowledge of locks possessed by its graduates, if the individuals trained by it at public expense use the knowledge and skill acquired in the school for the purpose of *picking* locks and defeating the purposes for which locks are used by law-abiding citizens.

Job pride, occupational pride, a desirable attitude relative to the job, its privileges and its responsibilities all indicate objectives to be given serious consideration in connection with any vocational program.

The ability to fit into an organization and to get along with one's associates, including subordinates and official superiors, is another asset of great value to a person in any occupation.

Some of the training objectives indicated in this discussion of job morale can be put over, at least in part, by suitable participating experience under supervision. For example, an instructor can delegate certain of his responsibilities to selected students and thus place them in situations where they will be required to deal with other people in the same way that they will have to deal with others after leaving school. Responsibilities for the inspection of work, checking up on stock used, making up bills of material, keeping time and attendance records and assuming responsibility for tools and equipment constitute some of the phases of a shop instructor's job which he can delegate and supervise and thereby accomplish something along the line of the morale objectives to which attention has been called.

Certain other objectives can best be put over informally and indirectly. A casual remark at the right time by a sensible instructor often carries farther with a boy than does a long-winded harangue or lecture.

For certain situations it has been found to be worth while to "just sit down and talk things over." There are innumerable cases where the greatest service which an instructor can render is to help a person to think. To help a boy to identify his responsibilities and figure out ways of meeting them is a very different procedure from humiliating him by ordinary disciplinary methods.

The preceding paragraph indicates the utility of the conference procedure for certain work with apprentices or trade and industrial students. Boys sixteen years old have had enough experience to furnish a real basis for the discussion of many social, economic and educational problems which confront boys of that age. These questions if unwisely handled or ignored may have a lasting effect upon the boy's attitude toward his work, his responsibilities to himself and to society, and other matters which go to make up the sum total of "morale." As a matter of fact, the conference procedure has possibilities in the whole field of education which are just beginning to be appreciated.

APPENDIX

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